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Construction Research Series

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THE BANK OF WESTMINSTER AND HYLAND PARK CONSTRUCTION CONTRACTS AS ENGINEERING STUDENT CLASSROOM PROJECTS; CONSTRUCTION PHASE

By
Robert J. Bossa

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Construction Engineering and Management Program

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THE BANK OF WESTMINSTER AND HYLAND PARK CONSTRUCTION CONTRACTS AS ENGINEERING STUDENT CLASSROOM PROJECTS; CONSTRUCTION PHASE

By
Robert J. Bossa

Presented to:

The Department of Civil, Environmental,

and Architectural Engineeering

The University of Colorado at Boulder

In Partial Fulfillment of the Requirements

for a Masters of Science Degree

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The University of Colorado at Boulder

Boulder, Colorado

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by

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Bossa, Robert J. (M.S., Civil Engineering)
The Bank of Westminster and Hyland Office Park Construction Contracts as Engineering Student Classroom Projects: Construction Phase.

Employers often find that the recently hired engineering school graduate has difficulty in correlating the methodology and the technology learned in the classroom to actual construction projects. The following report attempts to help in tying together classroom work and an actual construction project.

Information for the report was provided by Walters Construction Management, Inc. The report describes an actual office building presently under construction. Portions of the report are intended to be used as narrative type lessons, other parts are to be used as laboratory problems.

The report focuses on the organizational structure of the construction firm and the contractual requirements of the construction firm. The text then analyzes selected portions of the project in order to explain why certain construction related procedures have been made.

Photographs of the construction phase of the project are presented. The photographs are intended to provide a pictorial history of the construction project.

Past reports on this project will be used along with this report to develop a complete, total construction project for classroom application.

This abstract is approved as to form and content.

ACKNOWLEDGEMENTS

I would first like to thank the Bill Walters Company, specifically Mr. John Fox and Mr. David Metcalf of Walters Construction Management, Inc., who provided this construction contract to be used as a classroom project. The amount of time and costs expended by them and the firm is truly appreciated.

I would also like to thank Professor James Diekmann for his help and advice throughout this project.

INTRODUCTION

Within the scope of the undergraduate and graduate Civil and Architectural engineeering programs is the need to relate information from textbooks and classrooms to the actual construction industry. This report will attempt to bridge the gap between real world situations and the world of academics.

Walters Construction Management has agreed to let their organization and one of their current projects serve as a model for this report. The Bank of Westminster is under construction at the corner of 92nd Avenue and Sheridan Blvd. The bank project along with the organizational structure of Walters Construction Management will be studied and analyzed and results will give a realistic approach to future student assignments.

The objectives of this report are to study the construction phase of the Bank of Westminster and to tie it to specific graduate and undergraduate courses offered in the Construction Management field in the Department of Civil and Architectural Engineering. This report will study the development of the B.L. Walters company from the original corporate entity of Walters Construction Management and why this cooperation came into existence.

The actual organization of Walters Construction Management will be used as a reference for study in the Construction Management (CE 525) class. This will give the class a successful and working oganization to compare with the different organizational structures referred to in the classroom. Students will be able to discuss the advantages and disadvantages of this particular organization and compare their thoughts with the thoughts of members in the organization of Walters Construction Management. The class will be given the organizational structure and then discuss the formal and informal links of each department. Afterwards they can again compare their assumptions or results with those of the actual formal and informal links within Walters Construction Management.

By following one of the numerous subcontractors on this job students will experience the actual paper flow and contract related problems encountered during this project. This will be very effective in the Construction Contracts (CE 524) class when discussing effects of backcharging or how backcharging or changes in the plans will affect the subcontractor and his contract.

The use of time lapse photography will be used in the Construction Engineering I & II (CE 528 & CE 529) classes. Time lapse photography will show actual repetitive construction methods used on this project. The class will be able to analyze these methods and decide on possible alternative solutions to these specific construction practices.

Each classroom application will have packaged slides specifically for that module which will give a visual recording of the project at specific construction phases and will assist students in visualizing the project phase being discussed. The slides will encompass the project from the clearing of the site through the complete building.

PART I - PROJECT REPORT

THE ORGANIZATION STRUCTURE AND THE CREATION OF WALTERS CONSTRUCTION MANAGEMENT

The B.L. Walters Corporation was formed approximately three years ago, in 1981, to the corporate level from the Walters Construction Management organization which was formed in 1974. The primary motivation for forming a full service development company from the traditional construction management firm was the desire of the Chief Executive Officer to have control over what was being developed and how that development was to be accomplished. Because of the objective to have complete control, Walters Construction Management expanded and became the Bill L. Walters Company.

This Corporation is comprised of numerous companies that handle the acquisition of the land, the development of the raw land, the management of the construction, the maintenance and management of the constructed building, the leasing of completed buildings, and a Chief Financial Officer to maintain all the accounting records of the B.L. Walters Company. The overall corporate structure is shown in Figure 1.

ORGANIZATIONAL STRUCTURE

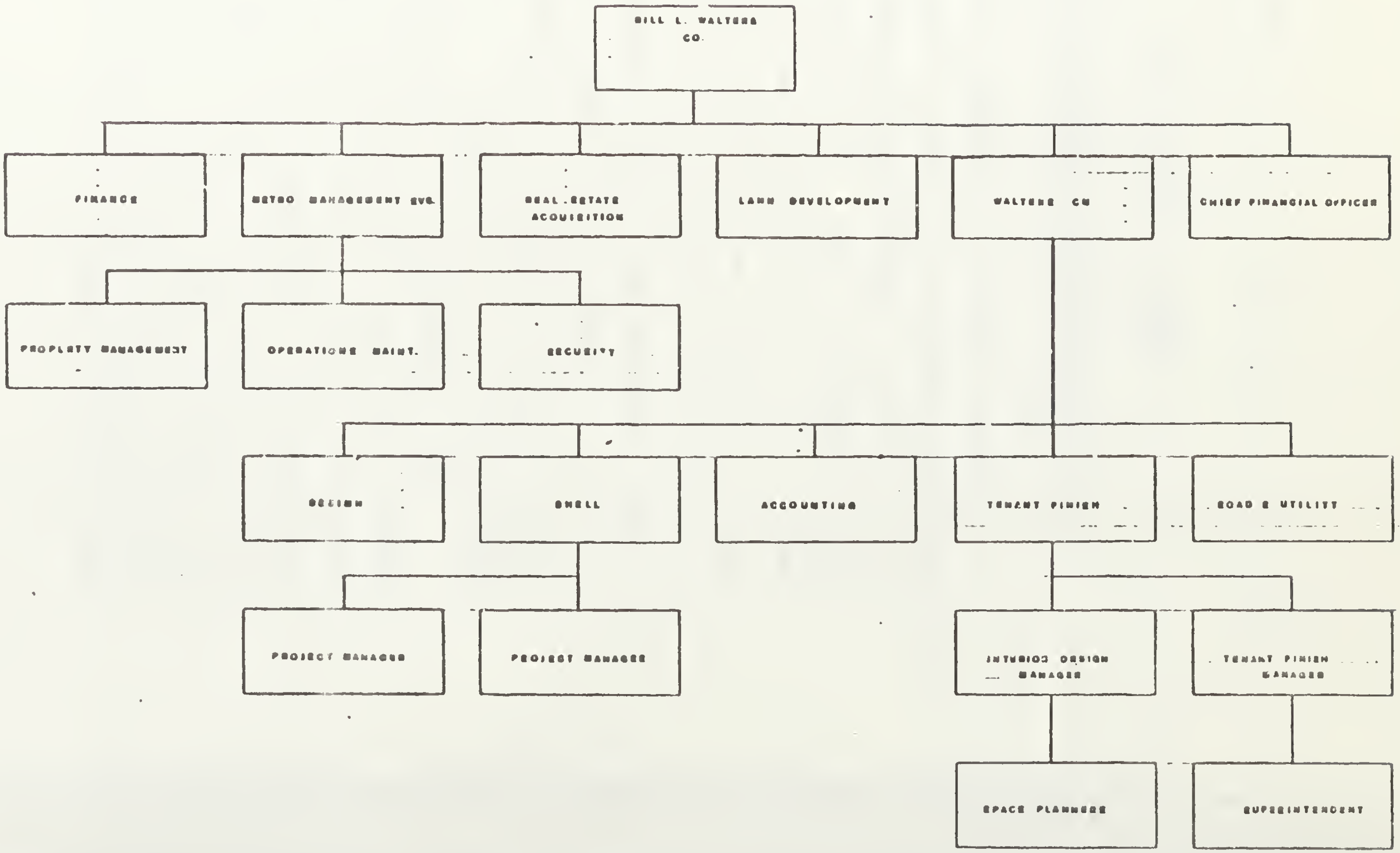


FIG. 1

This report will deal strictly with the construction management portion of the entire organization and will also touch upon the management/maintenance of a project once a project has been completed. The construction management part of B.L. Walters Company, hereafter referred to as Walters Construction Management, is a wholly owned subsidiary, and is divided into five areas. These areas are Architectural and Design, Shell Construction, Tenant Finish, Roads and Utilities, and Accounting.

Each of these separate areas operate on an arms-length, semi-formal basis with the B.L. Walters Company. At the head of Walters Construction Management is the Vice President and General Manager who reports directly to the President of B.L. Walters Company. The manager of Shell Projects and the Manager of Tenant Finish, along with the Manager of Road and Utilities, the Senior Architect and the Senior Accountant report directly to the Vice President.

The structure of Walters Construction management makes it very clear that as the general contractor, Walters Construction Management will subcontract a great deal of the work. As an organization they do not maintain the personnel to do the majority of work that a General Contractor can. By maintaining their own Project Managers and Field Supervisors, Walters Construction Management maintains control of these projects. In the architectural area the design drawings may be produced either by Walters or by outside designers. In the event that an outside designer is used, Walters Construction Management maintains control over the actual design, the design costs, and the design period.

During the design phase both the Shell Construction Department and the Tenant Finish Department are deeply involved in the design phase. All agreements between the various departments are at arms-length and there are written contracts between the various departments.

Tenant finish is one of the new areas created at Walters Construction Management because of the increased need for specialists to deal with tenants and getting them moved into their building. It is seen as one of the most important areas within the Walters Construction Management organization. At Walters Construction Management they recognized the need for this specialty and reorganized, creating Tenant Finish. The improvement of and a more receptive attitude toward tenant finish was seen as a bona fide plus in the renting of completed buildings and development of good customer relations. The Tenant Finish Department has become one of the biggest departments of Walters Construction Management. The Tenant Finish department is considered the income stream for Walters Construction Management. Working with the tenants and insuring their satisfaction is one of the biggest reasons for the success of Walters Construction

Management. To enhance the organization's credibility and to utilize the "one stop shopping" principal, a good Tenant Finish Department is essential to a successful company.

The goals of Tenant Finish are to give the customer complete satisfaction in their final spaces. Tenant Finish works very closely with the Design area and the Shell Construction area in the very beginning to alleviate problems with the customer's requests. The Tenant Finish Deartment is structured so that under the Manager of Tenant Finish there is an Interior Design Manager who, with the space planners assigned to him, will do the interior design for the tenant based on proven interior designs. The Interior Design Manager will incorporate into his designed spaces other options or additions that the customer may desire. Walters Construction Management builds typical office buildings thereby creating a quick, concise decisionmaking process of what will work in a specific building and what will not.

When the building is erected and weatherproof, the Project Managers for Tenant Finish, who with their own Field Supervisors, complete the interior portion of the building. The Project Manager for the Tenant Finish will maintain clear, concise records of what is being done to the interior of the building. With the typical building having more than one tenant, he will keep records of what spaces are for what tenants and keep his field supervisors appraised of any changes in design or schedule. The Tenant Finish Department will also do some work for organizations other than Walters Construction Management. The amount of this work is minimal and only comes to approximately ten percent of the actual tenant finish work accomplished.

The Shell Construction part of the Walters Construction Management organization is very similar to the Tenant Finish Department. Under the Manager of Shell Projects there are various Project Managers and in turn, under the Project Managers are various Field Supervisors.

The Project Manager would be involved with the project from the very first design meeting through the tenant occupation of the building. During the initial design meeting the Project Manager will be there with the Architects and Designers so that when any questions arise about the design in conjunction with the actual construction, it can be answered quickly. The Project Manager also communicates with the various Consulting Engineers hired by the Design Department to help answer any questions that may come up about the Mechanical, Electrical, or Structural systems. The Project Manager would report directly to the Manager of Shell Projects with any problems that he could not solve informally with his counterpart in the Design area, Tenant Finish area, Accounting area, or Road and Utility area. The basic philosophy of the entire organization is to solve any problem that may arise at the lowest possible level.

If the Project Manager can't solve a problem informally, he would move up his chain of command to the Manager of Shell Projects who will try to solve the problem at his level. If this is not possible then the Vice President and General Manager of Walters Construction Management will make the decision. Because of the informality and the close proximity of these various Managers and Project Managers it is infrequent that a problem can not be solved among the people involved.

In conclusion, the Walters Construction Management organization is a main part of a Design-Build organization that also incorporates the management/maintenance of the structure. The Walters Construction Management organization goes one step further than the Professional Construction Manager organization and not only designs and builds, but also leases, manages, and maintains the structures they erect. This keeps Walters a step ahead of their competition. Walters Construction Management controls the design, the design cost, and the design period but also maintains their credibility and their positive public image by catering to their customers not only in the construction phase, but afterwards in the moving in and leasing phase.

OBJECTIVES OF WALTERS CONSTRUCTION MANAGEMENT AS COMPARED TO THEORETICAL ORGANIZATIONS

In comparison with normal project delivery systems, Walters Construction Management is a combination of the Owner-Builder organization and the Professional Construction Management organization.

Theoretically, a Professional Construction Management organization combines three parties into a team consisting of the owner, designer, and construction manager in a non-adversary relationship. The construction manager works closely with the owner and the designer from the beginning to the completion of the project. The construction manager does not normally perform construction work with his own forces or guarantee the overall cost of the work. Once the budget is approved the construction manager monitors developments in schedules, quality requirements, and spending in order to maintain the objectives established in the beginning of the project. The construction manager advises and coordinates the procurement of any long lead materials or equipment. He will monitor the payments to subcontractors, the changes in contracts or any claims. In general, the construction manager monitors actual cost, schedules, and quality control.

Walters Construction Management does all of this, but is different in one very important aspect of the typical model. Walters Construction Management does not go out and bid on projects to manage; their projects are established down through the hierarchy of their chain of command. The Chief Executive Officer who is an architect by training, may want to develop land in accordance with members of an organization that he has an interest in, thereby creating the projects.

Walters' desire to maintain absolute control over their project is in line with the aims of the Owner-Builder organization. In theory, the owner is responsible for the design and construction of the project. The owner has the option of using his own work forces or to subcontract part or all of the work.

The Walters Construction Management organization is a Line and Staff Task Force. As shown in Figure 1 there is a distinct hierarchy and a designated chain of command. The hierarchy is designated only for those decisions that can't be resolved at lower levels in the organization. A strength of Walters Construction Management is the project orientation of the entire project team. One of the weaknesses, in theory, in a line and staff organization is that individuals may be troubled by the dual accountability to both a project and a functional boss.

Walters Construction Management is also structured somewhat as a Matrix Organization. The informal lines of the structure opens lines of communication at all levels and gives people the ability to talk with counterparts and maintain a knowledgeable and productive environment. Therefore, Walters construction Management is most definitely a Line and Staff Task Force, but with a little of the Matrix Organization added to help alleviate any communication problems.

In conclusion, the main objective of Walters Construction Management is to maintain absolute control over the project and to produce a product that is a marketable commodity.

DIFFERENCES BETWEEN WALTERS CONSTRUCTION MANAGEMENT AND OTHER CONSTRUCTION MANAGERS

A major difference between Walters Construction Management and other developers is the "one stop shopping" approach. Not only will Walters Construction Management design the building, they will manage the interior finish, and will maintain the upkeep of the building and surrounding grounds. This is a major difference since most developers utilize a fragmented approach to the development of buildings.

A construction Manager who utilizes the fragmented approach will have someone come in who owns the land and wants it developed. This manager may or may not help find a designer that can design what the owner wants on the land. Once the design is approved by all interested parties, it is then turned over to the construction manager. The construction manager in turn requests bids based on these designs from various general contractors who in turn receive bids from various subcontractors.

Once the construction manager picks his general contractor he will manage the job as per plans and specifications and keep track of any changes in the project. He will be the owner's representative on the job. The construction manager, in most instances, will carry professional liability insurance for this specific project and also on any other project he may be managing at the time.

Under Walters Construction management, a major difference is that Walters Construction Management is covered under an umbrella policy from the B.L. Walters Company for professional liability. When Walters Construction Management gets a project to be managed, it usually has been first brainstormed at the Chief Executive Officer's level of the B.L. Walters Company. The land has been acquired under the Land Acquisition Department of B.L. Walters Company, and the developers in Land Development may have specific plans for this tract of land.

Walters Construction Management, like other construction managers, would go out looking for bids for the various parts of construction, but would act as their own general contractor. The differences are quite unique in that Walters Construction Management has control over the design of the project, control of the construction management of the project, control over changes in the design of the project, and once the project is complete, control over the management of the building.

A developer or construction manager who utilizes the fragmented approach can run into many difficulties during the project's construction. There could be quite a bit of money spent in litigation determining who is responsible and who will pay for corrections to any faulty design or construction applications. If once a tenant has occupied the building and there are maintenance problems, the developer must get in touch with the people who do their maintenance to correct it. In the B.L. Walters company, they would handle their own maintenance problems and there would be no doubt as to what the priority is.

In the fragmented approach, the "finger pointing" and litigation could go on for quite awhile. Finding out who is responsible and then making sure the responsible party adheres to their end of the agreement could be costly not only in dollars, but also in time. While in the full service development company such as Walters Construction Management, a decision could be made and action to fix the problem could be imposed.

The Walters Construction Management organization allows decisions to be made faster in the pre-construction phase and the construction phase than in the fragmented approach. This is because in the fragmented approach, the construction manager or developer is trying to touch base with numerous people involved in the project at various locations. The start up cycle in decisionmaking at Walters Construction Management is quite short compared to a fragmented approach of construction management. At Walters Construction Management the process of decisionmaking is known and has been utilized over and over again. The members of the organization know who is in charge and where to go for certain decisions. In a fragmented approach, the construction manager must first establish the lines of communication and the chain of command. This alone is very time consuming.

A significant difference is that the Chief Executive Officer of B.L. Walters Company has absolute control over the Walters Construction Management organization as well as Land Acquisition, Land Development, Maintenance/Management, etc. which ensures a quick decisionmaking process. Because of this control, the Walters Construction Management organization can be more positive and make absolute commitments to cities, municipalities, and/or other public service areas for not only the construction of a project but its overall development. This greatly enhances the credibility of the organization as well as maintaining the flexibility to propose or accept alternatives to the design quickly and effectively.

In conclusion, the significant difference between Walters Construction Management and the fragmented approach is that the decisionmaking process in both the pre-construction and construction phase is quicker and much more efficient in an organization such as Walters Construction Management. Having all the participants for a certain project under one roof makes the life of the project from conception to completion significantly shorter and improves the quality of the finished project to the tenant or owner.

ADVANTAGES AND DISADVANTAGES OF WALTERS CONSTRUCTION MANAGEMENT

In interviews and conversations with several members of the organizational structure of Walters Construction Management, some distinct advantages and disadvantages of the organization appeared.

A distinct advantage that appeared frequently was that there was a more positive attitude towards the customer and that commitments would be made and adhered to. The majority of people felt that this was a great advantage in enhancing Walters Construction Management's credibility and was in conjunction with the B.L. Walters Company policy of insuring the customer's satisfaction. At times this could be a disadvantage. Because of the organization's feeling of responsibility, they could be abused by trying to make the customer happy at all costs. Having to maintain the warranty can sometimes create the feeling of jumping through hoops.

During good construction periods, the desire to control the project in its entirety could be an advantage because you have a varied selection of customers to choose from. A disadvantage to maintaining complete control is that a number of contractors don't want to give up control to Walters Construction Management, so they don't work for them. This is found more often during good construction periods. This could put a damper on the marketplace for Walters Construction Management, creating a loss of consultants and a loss of a certain part of the market. During slow times in the construction field, this desire for control is not an advantage, but it is not a big disadvantage.

One disadvantage is that it costs more to do business. The continuity of the organization creates a need for more supervisors to be kept on the payroll when times are slow. In other organizations they would release some supervisors, but at Walters Construction Management they are retained.

Having changes dealt with at a lower level in the organization is a valuable advantage. If there is a policy change affecting a project, because of the informal chain of command within Walters Construction Management, it can be dealt with quickly and at the level the change is having the most effect. The most distinctive advantage observed was that there was more teamwork in the organization at Walters Construction Management. The adversary relationship was minimal and it was observed that any adversities between certain departments could be resolved. The goal of Walters Construction Management is known by everybody and the teamwork needed to achieve that goal is there. It is respected that when it comes down to "passing the buck" or if adverse designs or adverse construction occur, it is all kept within the

B.L. Walters Company organization. This enhances the ability for problems to be solved expeditiously and favorably to all parties involved.

In conclusion, based on my interviews and personal observations, it was found that the advantages of the Walters Construction Management organization outtweighed the disadvantages. Various members of the organization felt that the teamwork was favorable for a successful project and that having a self-contained organization where any number of problems from accounting to design could be solved quickly and effectively, was mandatory for a successful project.

PART II - LEGAL AND CONTRACTUAL REQUIREMENTS

Walters Construction Management subcontracts a major portion of their work and with this comes the responsiblity to insure that they receive their specified requirements.

This section will address the requirements of a Construction Management firm as regards the bidding process, contracts, job progress management, job cost management, planning and scheduling, modifications, and commercial issues. It will then address the practical application of the aforementioned procedures. These procedures will be documented with actual paperwork used on the Bank of Westminster project.

THEORETICAL APPLICATION

At the beginning of a project plans and specifications must be developed and approved for construction. This requires that the engineering departments and the designer be able to formally agree on a specific set of plans that will fulfill the requirements of the owner. In conjunction with the plans, the various departments will specify any restrictions or constraints that must be included in the specifications.

Once the plans and specifications are approved the Construction Management firm will enter the bidding process. A letter of inquiry is sent out to various subcontractors to determine what contractors are interested in bidding on the project. It will describe when the bids are to be invited, the general nature of the project, what kind of bid is required, and when bids are due.[1] Before the Construction Management firm or owner solicits bids from any contractor he will perform extensive background research on these contractors checking their previous projects, their financial stability, and other general information. Once the background research is complete, the owner will send out invitations to bid. The package will contain the plans and specifications, the type of contract that will be used, the bid form, and the general conditions of the bid invitation. The subcontractor is then required to assemble his bid.

Once the subcontractor assembles his bid, the owner and architect have 30 to 60 days to award the job. At this time the owner and architect will discuss modifications or changes with the two lowest bidders. In these discussions a clear understanding of the agreements must be reached. Once an agreement is reached the Notice of Award is sent to the subcontractor. This authorizes the subcontractor to start ordering long lead time items and to start shop drawings. In the Notice of Award it is stated that a formal contract will be forthcoming.

In the construction contract received by the subcontractor the description of work, the description of terms, a completion statement insuring the subcontractor is going to provide the labor, material and equipment, and any other general provisions deemed necessary by the owner or his representative. This contract will also stipulate how the subcontractor will be compensated for the work, and have a project title and project number. This form requires signatures, the subcontractor's license number, his Workmen's Compensation Insurance Company, and his Personal Liability Insurance Company with policy numbers and expiration dates.

Once the project is underway it must be insured that the subcontractor does what was specified. Utilizing job progress management is one of the many factors the owner's representative on the project site must be aware of.[2] In a job progress report the subcontractor will have his job broken into manageable activities and easily understood schedules. A bar chart is easily understood and has activity start and completion dates. This is a widely used tool in understanding a project's progress. The subcontractor, when placing his bid, can set up his progress report based on the time constraints set by the owner. To make this progress report work, meetings must be established on a routine basis so the owner is informed of the subcontractor's schedule. Daily reports filed by the field supervisor will give an account of what the subcontractor accomplished and if he is on schedule. This owner's daily report can be compared with the subcontractor's daily report for any discrepancies. In the daily reports it will show who did what, with how many crew members, and with what equipment and material.

Along with the progress of the job, the project can be managed with the daily, weekly, or monthly costs of the job. The subcontractor and owner have agreed on the subcontractor's costs and monitoring his costs will help insure the owner and subcontractor know what is being spent and for what. The project job cost sheet should break down costs into material, equipment, labor, and any other category the subcontractor or owner deems necessary. This will simplify the subcontractor's requisition for payment. A change that has increased the scope of the contract or a mistake in labor requirements will eventually show up in the cost management forms.

The subcontractor can be awarded the job under several different kinds of construction contracts. The various contracts can be lump sum, cost-plus-fixed-fee or percentage-fee, and guaranteed-maximum-plus-fixed-fee.[3] Once the job has been awarded the subcontractor must take steps to contact his material suppliers and contract for the purchase of the material needed.[4] A requirement by the owner is a list of the material suppliers utilized by the subcontractor and notification immediately if the list changes.

To keep abreast of the construction costs the owner and the subcontractor maintain a day to day record of material costs and labor. The owner's representative on the job can keep track of labor by daily or weekly time cards submitted for approval. Copies of all material requisitions that have been delivered should also be brought through the owner's field supervisor for submittal to the accounting department. Along with the time cards the field supervisor will fill out daily logs of what occurred on the project, what work was accomplished, crew size, equipment used, and any other valuable information. In the mechanical work it is extremely important for the plumbing subcontractor to keep records of the various pipe sizes that are used, valves and fittings, and the roughing for fixtures as well as the finished fixtures. This will give the subcontractor an idea of the progress of his job by the amount of material in place and also keep check on any pilfering that can occur.[5]

In the beginning of the project the subcontractor should be advised as to the proper format for requisitioning payment. The owner or architect must clearly state what vouchers, payrolls, bills of lading, or other material he should have; the legal requirements that must be met; when the requisition must be ready; who must approve it; and when to expect his money.[6]

Most contracts will stipulate that monthly requisitions be submitted. This helps the accounting department maintain an active account of the cost for the project. It also gives the owner some leverage if he is not pleased with the progress and insures that inspections will be done at timely intervals, on the project by his field supervisor before payment is authorized. When a requisition is submitted a certain percent is retained as a retainage fee. The sole purpose for this retainage is to make sure the owner does not pay the full value until all work is complete.[7] This will act as an incentive for the subcontractor to complete work that may be in dispute.

During the course of a project change orders occur. There are numerous reasons for change orders and usually can be no trouble if they are handled expeditiously and properly. Some of the more frequent reasons for change orders are changes due to additional work, changes caused by errors in planning, changes in codes creating extras, and extra compensation because of job conditions.[8]

Changes due to additional work are caused by the owner or architect wanting to change the type of work, upgrade the quality of certain material, or make an addition. Changes due to errors in planning might be errors in dimensions or omitting an essential piece of equipment. The subcontractor is responsible for knowing the codes of his trade and should be aware of any changes in the codes. Change of job conditions can be created by the owner or architect being indecisive, the owner may have financial trouble and slow the job down, or an incompetent subcontractor can not accomplish what he originally agreed on.

Whatever the reason for changes a procedure must be established for processing these changes. Since the changes or modifications will reflect what is happening on the project site, the information must come from the project site itself.[9] A change order can occur at any point of the total construction operation and should include any specific information concerning the exact area where this change originated and who initiated it.[10] Prompt notice should be given to the Contractor, the

Owner, and the Architect of any proposed changes. This will give all the personnel involved the earliest notice of any impending changes.

The authority to authorize changes or modifications will be with the owner or the architect or their designated representatives. Therefore complete and proper procedures for recording proposed changes or modifications by the field supervisor are extremely important. There must be complete information obtained from the field supervisor covering every step from the initial suggestion of the change, to the estimation of material and labor required for the change, the new agreement between the owner and subcontractor, and the cancellation of the change or the incorporation of the change.[11] Because of the various reasons for changes and modifications a high priority should be to have a member of the contracting organization examine the bidding documents from a contractual standpoint and determine where changes may be adviseable.[12]

In conclusion, the object of any contracts administrator is to see that problems are addressed before they reach the construction site. Clear, concise procedures for the contractors to follow when bidding for a project and explicit guidelines on how to address any problems once the project is started should be established. Once the guidelines and rules are established and understood by all parties concerned then a well organized and properly run project can be expected.

PRACTICAL APPLICATION

The practical application of legal and contractual requirements will be discussed utilizing one of the subcontractors for the Bank of Westminster project.

Walters C.M. started their preliminary meetings with the various engineering departments, architects, and project manager for the Bank of Westminster as early as March 1984. In these meetings preliminary designs were examined and reviewed to alleviate any future construction or management problems. The past experiences of the engineers and the project manager could help identify problems in the design that will effect the construction of the project.

When the plans and specifications were finalized Walters C.M. sent out invitations for bids. Having dealt with contractors or subcontractors in the past Walters C.M. has a list of acceptable contractors and will notify them of possible projects. During the preliminary design meetings Walters C.M. had already been in touch with various contractors and subcontractors explaining the project and getting responses from interested contractors. Walters C.M. is a private organization and therefore does not have to pick the lowest bidder or accept the lowest bid. Having sent out a letter of inquiry

Walters C.M. will receive a Bid Form from the various contractors stating they have reviewed the plans, specifications, and addenda prepared by the design firm hired by Walters C.M.. It will give the name of the project, the bid amount, and what they will accomplish. The bid form will state the contractor will formalize the work with the signing of a written contract within ten days of receiving a written "Notice of Award". See Appendix A, Fig. 1.

Before Walters C.M. sends a "Notice of Award" they will review the contractor's bid form to insure he received all of the addenda and review any exceptions or changes the contractor made to what is specified. The contractor and Walters C.M. will insure there is a clear understanding of the agreements before a "Notice of Award" is sent. These agreements can be made over the phone or in person, but proper documentation must be required. See Appendix A, Figure 2 for copies of phone bids that the plumbing subcontractor made deleting certain items, revised prices and what was not included on the original bid.

The "Notice of Award" is then sent to the contractor, referencing the project by title and location, for him to proceed based upon his proposal of the dated bid form. The "Notice of Award" will give the contractor authorization to start shop drawings and to order long lead time items. Within the "Notice of Award" is a committment that a formal contract is forthcoming. See Appendix A, Fig. 3.

Walters C.M. requires that once the contractor receives his "Notice of Award", a list of the material suppliers that the contractor will be utilizing is submitted and if any changes to the list occur they will be notified immediately. See Appendix A, Fig. 4.

Within 30 to 60 days Walters C.M. will send out a standard Subcontract Form for the subcontractor to review. Their form is very similar to the American Institute of Architects Document A101. It will contain the date of agreement, who the agreement is made between, the project name, the architect's name, and the provisions of the contract. This form will stipulate the work to be accomplished and will provide standard provisions on the back. Additional provisions may be added and noted for the subcontractor's verification and approval. As discussed in the Theoretical Application a Workmen's Compensation Insurance Policy and a Personal Liability Insurance Policy with policy numbers and expiration dates appears on the bottom of the Standard Subcontract Form. See Appendix A, Fig. 6 and 7.

One of the additional provisions Walters C.M. added was provision 43 which addresses labor disputes on the project. This provision requires that work be continued on the project without delay. It was discussed with the Project Manager on how access to the project would be handled in case of a picket or dispute. Two entrances to the project would be authorized, one for the picket lines and one for the subcontractors not in dispute.

Up to this point Waltes C.M. practices the theoretical applications previously mentioned, but on this project there is a definite lack in formal job progress management. The Field Supervisor monitors what is accomplished on a daily basis, but the lack of an activity listing and a logic diagram creates difficulties in accurately keeping track of the project's progress. The bar chart is one tool that is being used, but the extensive nature of construction and construction management stipulates that more should be done. This bar chart was created by Walters C.M. and does not have any input from the subcontractor. To tell the subcontractor he is behind or ahead of schedule is strictly Walters C.M.'s interpretation.

Another tool monitoring the job progress of the Bank of Westminster is the daily logs submitted by the Field Supervisor. See Appendix B. These logs give a day by day account of what occurred on the project and what the subcontractors accomplished. It gives updates of any specific problems with weather, concrete received on the job, and other general problems. The logs will tell what equipment was used, for how long, and why. This not only helps in monitoring the progress of the job, but is useable documentation for backcharging a subcontractor.

Walters C.M. has the capability to monitor the project progress and utilizes the computer on other projects. On the Bank of Westminster it must be assumed that the smallness of the project plus the release of certain employees created a void.

Walters C.M. has the capabilities of inputing activity listings and having a logic diagram created. They also have the capabilities with this logic diagram to establish resource leveling, scheduling, and cost control. They utilize the PMS-II project management system which is one of the most extensive project management systems for a personal computer. See Appendix C.

In the area of job cost control Walters C.M. again has extensive capabilities in this area. They utilize the Estimax software which can give them 3 levels of cost for any project. Each level will have a breakdown of cost code, description, labor cost, material cost, subcontractors, totals, and dollar per square foot. As the levels get more explicit a breakdown for quantities and units is also used. See Appendix A, Fig. 8. But Walters C.M. doesn't utilize these tools on the Bank of Westminster project.

During the Bank of Westminster project problems of a subcontractor not being able to accomplish part of the work originally contracted for surfaced. This in turn created a modification to the original agreement. Walters C.M.'s field supervisor was keeping track of the subcontractor's progress and found he was getting behind schedule. The project manager was notified and he in turn got in touch with the subcontractor. The project manager then offered to do a certain part of the work for the subcontractor with Walters C.M. personnel. During the conversation it was agreed what Walters C.M. would do and the maximum amount it would cost the subcontractor. This conversation was referenced by the project manager when he sent a formal letter explaining what Walters C.M. was going to do, how much it would cost the subcontractor, and that a formal Change Order to the contract or a backcharge would be executed. See Appendix A, Fig. 9.

The notification of backcharge was the choice made by Walters C.M. in dealing with this specific subcontractor. In the notification for backcharge is the date, the project name, the subcontractor number which is a key to what subcontractor it is and what kind of work, the cost code, and a description of what exactly Walters C.M. is charging the subcontractor for. See Appendix A, Fig. 10.

After all the work agreed on is done by Walters C.M. a Subcontract Backcharge form is filled out. See Appendix D. The form will have the project name, the subcontract number, the date it was finalized, the cost code, and the notification date. It will describe what was done by Walters C.M. and the maximum backcharge total agreed on referencing Appendix A, Fig. 9. Attached to the Subcontract Backcharge would be Walters C.M.'s cost distribution summaries, material/equipment invoices, and payroll distribution sheets to substantiate the backcharge. At the bottom is a summary of what money was spent on labor and material. This was then subtracted from the maximum allowable backcharge authorized. As you can see by Appendix D Walters C.M. lost money on this backcharge. An error in the estimate for the maximum cost of this backcharge cost Walters C.M. $3,089.28.

In conclusion, Walters C.M. utilizes a number of the theoretical approaches to construction management and project control. But in the important areas of progress management and cost management they are not utilizing the tools available within their own organization. Again this could be because of the release of certain people and a lack of manpower to use these tools and also because of the small scope of the Bank of Westminster project as compared to other projects.

NOTES

[1] Laurence E. Reiner, Handbook for Construction Management (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1972), p. 33.

[2] Ibid., p. 73.

[3] Ibid., p. 40.

[4] Ibid., p. 89.

[5] Ibid., p. 93.

[6] Ibid., p. 94.

[7] Ibid., p. 95.

[8] Ibid., p. 98.

[9] Clarence J. Douglas and Elmer L. Munger, Construction Management (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1969), p. 146.

[10] Ibid., p. 148.

[11] Ibid.

[12] Samuel P. Oppenheimer, Directing Construction for a Profit (New York, N.Y.: McGraw Hill Book Co., 1971), p. 204.

PART III

CONCLUSIONS

The original projected start date for the Bank of Westminster project was to be in April 1984. However the start date was slipped to July, 1984 due to design related and owner induced delays.

The impact of the delay in starting did not cause the anticipated negative effect from the weather. It was originally thought that not having the building enclosed by December, harsh weather conditions would be a detrimental factor. But the weather has cooperated to date and the enclosure of the building should be completed by the end of 1984.

The organizational structure was found to be very effective and maintained a well defined hierarchy. This organizational structure encouraged lateral communication among the various departments within the organization. The close proximity of the various departments was very beneficial to the decision making process. This close proximity also favored a positive and effective team atmosphere. Changes in the plans or specifications or errors in the plans and specifications could be worked out expeditiously. The closeness encouraged a relaxed atmosphere when dealing with peers or superiors and created effective group meetings for the day to day problem solving.

The field management of the project was very good and was the main reason for the project's progress. The lack of practical construction management practices, (i.e. logic diagrams, schedules, cost management) hindered the management of this project. The ability of the field management to keep the daily logs accurately was a substantial reason for the home office not being misinformed or the project being mis-managed. During a problem with a subcontractor not being able to accomplish the agreed work that he was contracted for, the accuracy of the records kept in the field and forwarded to the home office helped alleviate a more substantial loss of money than was incurred.

Time schedules and deadlines that contractors were held to were established from the barchart created by management. The contractor can not be legally held to these time constraints if he did not participate in their creation. Establishing a logic diagram with the computer capabilities available at the home office would have maintained a tighter schedule and created substantial documentation for contractor backcharges or change orders. On the Bank of Westminster project the computer capabilities available were not utilized to their potential and caused managerial difficulties. These difficulties were only overcome by the abilities of the field management and project management assigned to the project.

During the evaluation of the pre-cast erection timelapse film it was found that the crew size for the project was efficient and appropriate. The amount of idle time during the pre-cast erection was minimal and the supervision of the crew was adequate. The handling of the precast pieces at times was redundant and could have been more efficient, but the overall process was good.

The brick veneer erection timelapse was also evaluated and the crew size was sufficient. During one established cycle the amount of idle time was so minimal it didn't account for any time on the crew balance analysis figure.

The evaluation of the activity listing, logic diagram, scheduling, and resource availability and utilization was hindered. The inability of management to utilize the computer software capabilities available created a gap in this report's analysis. A more concise and clear understanding of how actual "real world" management coincides with classroom management theory would have been very helpful in the grasp of theoretical techniques for students. The ability to study a project step by step in theory and then to compare it with reality would have helped close the gap between academia and the real world of construction management.

The usefulness of this report to students will help differentiate between the theoretical application taught in the classroom and what happens on an actual job site. The students will understand that a project can be planned and scrutinized theoretically but that intangibles such as human factors in management, changes in project priorities, or changes in personnel can not always be accounted for in theory. The ability for management to be flexible and to keep clear, concise records is very important, but also management must be able to deal with those intangibles in a practical and professional manner. This report shows how the theoretical and practical application of construction management coexisted on the Bank of Westminster project and what the deficiencies were.

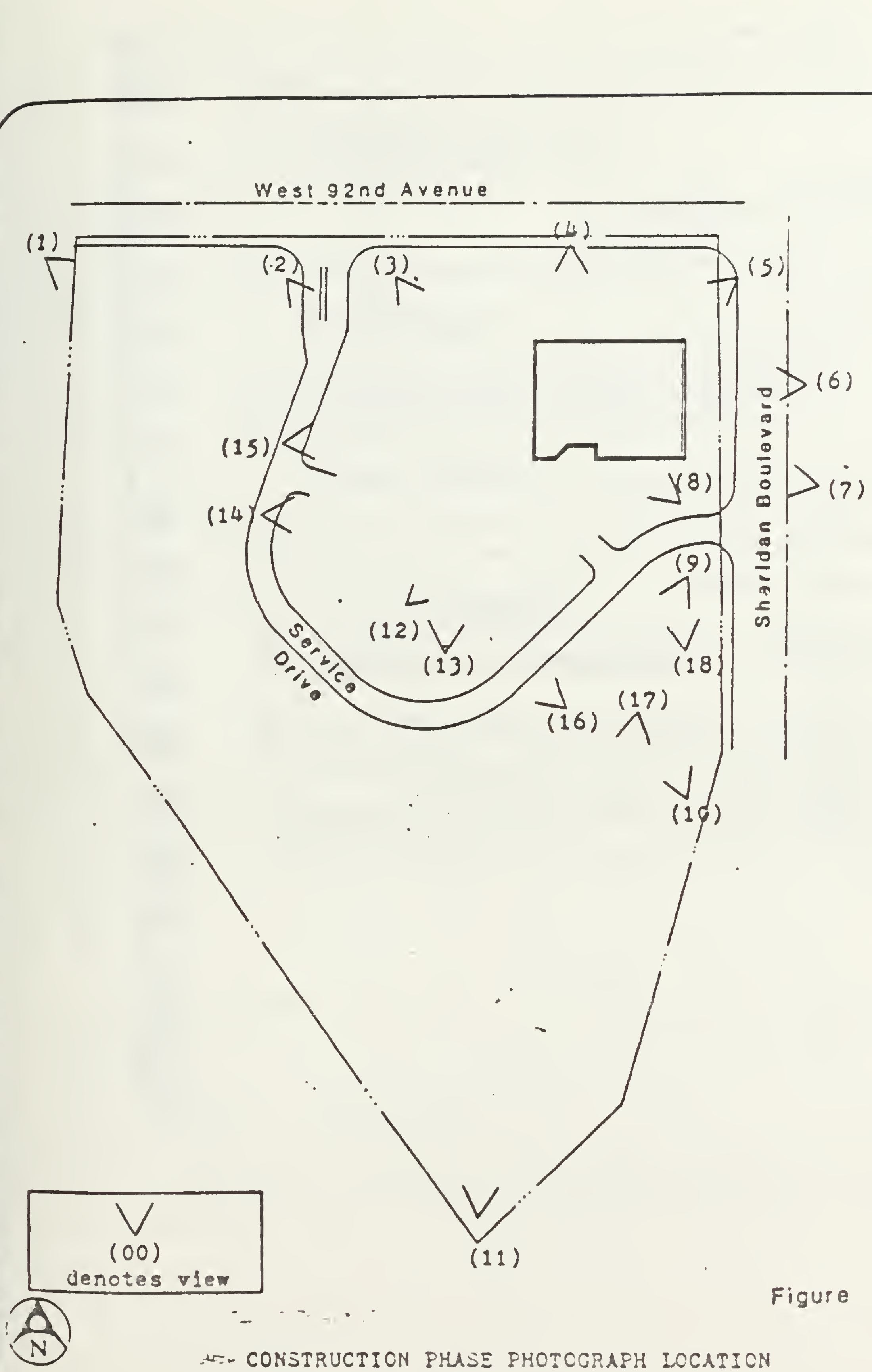
In general the starting date slippage and the loss of some kay personnel within the Walters C.M. organization created a severe time factor in the completion of this report. The inability to follow this construction project to its´finish reduced the information available for classroom study.

PART IV PHOTOGRAPHS

In conjunction with this project, construction photographs have been taken. The exact location from which they were taken is shown on Figure 2 and description of each view is given.

POSITION	DESCRIPTION
1	View from far North-West property line.
2	View from West side of 92nd Avenue service drive cut out.
3	View from East. Side of 92nd Avenue service drive cut out.
4	View of proposed North elevation.
5	View from far North-West property line (intersection of 92nd Avenue and Sheridan Boulevard).
6	View of proposed East elevation from the far side of Sheridan Boulevard.
7	View from North side of Sheridan Boulevard cut out.
8	View of the proposed South elevation of the Bank.
9	View of existing temporary bank from North side of Sheridan Boulevard cut out.

10	View of existing temporary bank from fence line at Sheridan Boulevard.
11	View of the site from far Southern Corner.
12	View from center of service drive of 5 + 00.
13	View of parking log from South edge.
14	View from center of service drive at 3 + 00.
15	View from center of entry cutout to bank from service drive at 2 + 85.
16	View of the proposed South elevation of the bank.



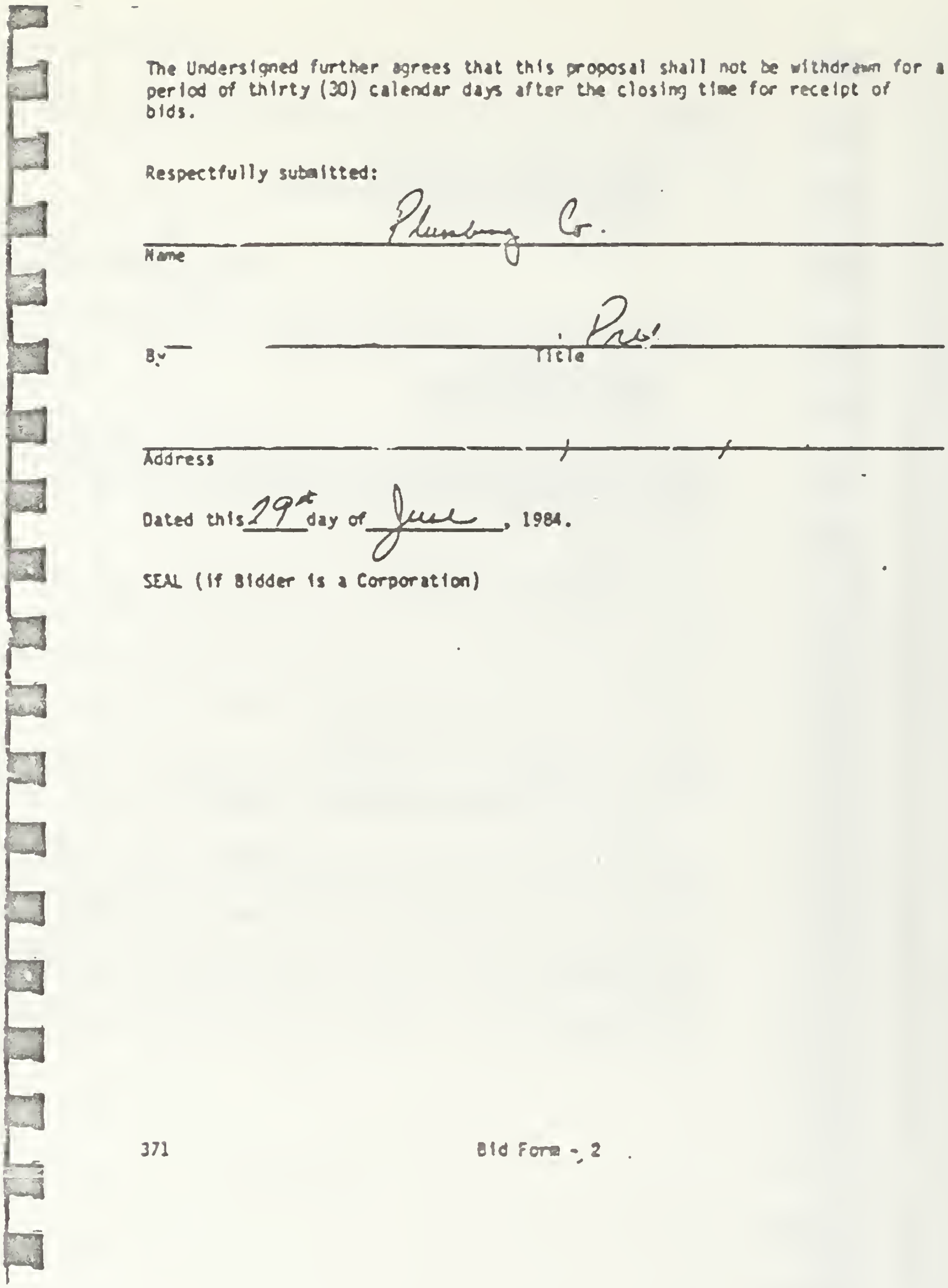
Figure

CONSTRUCTION PHASE PHOTOGRAPH LOCATION

FIG. 2

APPENDIX A

BID DOCUMENTS AND CONTRACT



The Undersigned further agrees that this proposal shall not be withdrawn for a period of thirty (30) calendar days after the closing time for receipt of bids.

Respectfully submitted:

Name Plumbing Co.

By ____________ Title Pres

Address ____________

Dated this 29th day of June, 1984.

SEAL (if Bidder is a Corporation)

371 Bid Form - 2

FIG. 1

PROJECT [redacted] of Westminster

COMPANY [redacted]

BY

PHONE [redacted]

Rec'd By

Date 7-16-84

Time

Per Plans and Specs. _____Yes _____No

Including Addenda - No. _______

Including Alternates _____Yes _____No

Taxes Included - State _____Yes _____No

Local _____Yes _____No

Freight Allowed _____Yes _____No

Installed _____Yes _____No

DESCRIPTION	AMOUNT
Wet Taps — No City Tap Fees Included	
Tap Fees 4" Sewer	
12"x12" Wet Tap @ [illegible]	
Cost of Night Work — O.T. not included	
Barricades & Flagmen — No	
Asphalt Patching — No	
Structures — Form & Pour or Precast	
Concrete	
Backfill	
Pipe Utilities — Trenching OK	
— Surge OK	
— Kick Blocks OK	
Size of Crew(s) One or Two	

FIG. 2

PROJECT Bank of Weston
COMPANY Plumbing
BY
PHONE

Rec'd By
Date 7-11-94
Time

Per Plans and Specs. ____Yes ____No
Including Addenda - No. ____
Including Alternates ____Yes ____No

Taxes Included - State ____Yes ____No
Local ____Yes ____No
Freight Allowed ____Yes ____No
Installed ____Yes ____No

DESCRIPTION	AMOUNT
Delete ~395 LF of 12" & 15" $12,000	
Delete 4 ea Catch & 1 Manhole	
→ Revised Price $11,702	
Schedule on Sun [illegible] Pointe Rd	

FIG. 2

PHONE BID

PROJECT Bank of Westminster

COMPANY Plumbing

BY

PHONE

Rec'd By

Date

Time

Per Plans and Specs. ____ Yes ____ No

Including Addenda - No. ____

Including Alternates ____ Yes ____ No

Taxes Included - State ____ Yes ____ No

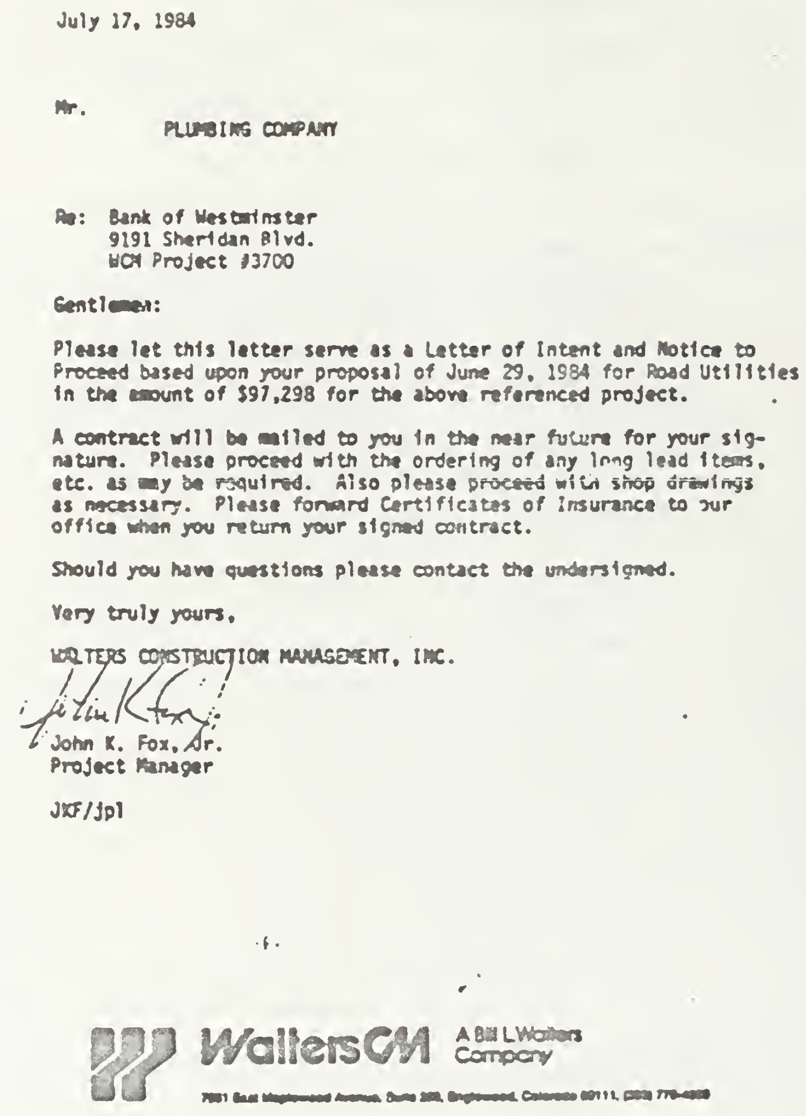
Local ____ Yes ____ No

Freight Allowed ____ Yes ____ No

Installed ____ Yes ____ No

DESCRIPTION	AMOUNT
1) Dig Manhole OK	
2) O.T. for Street Cut $1,300	
8 hrs	
3)	

FIG. 2



July 17, 1984

Mr.
PLUMBING COMPANY

Re: Bank of Westminster
9191 Sheridan Blvd.
WCM Project #3700

Gentlemen:

Please let this letter serve as a Letter of Intent and Notice to Proceed based upon your proposal of June 29, 1984 for Road Utilities in the amount of $97,298 for the above referenced project.

A contract will be mailed to you in the near future for your signature. Please proceed with the ordering of any long lead items, etc. as may be required. Also please proceed with shop drawings as necessary. Please forward Certificates of Insurance to our office when you return your signed contract.

Should you have questions please contact the undersigned.

Very truly yours,

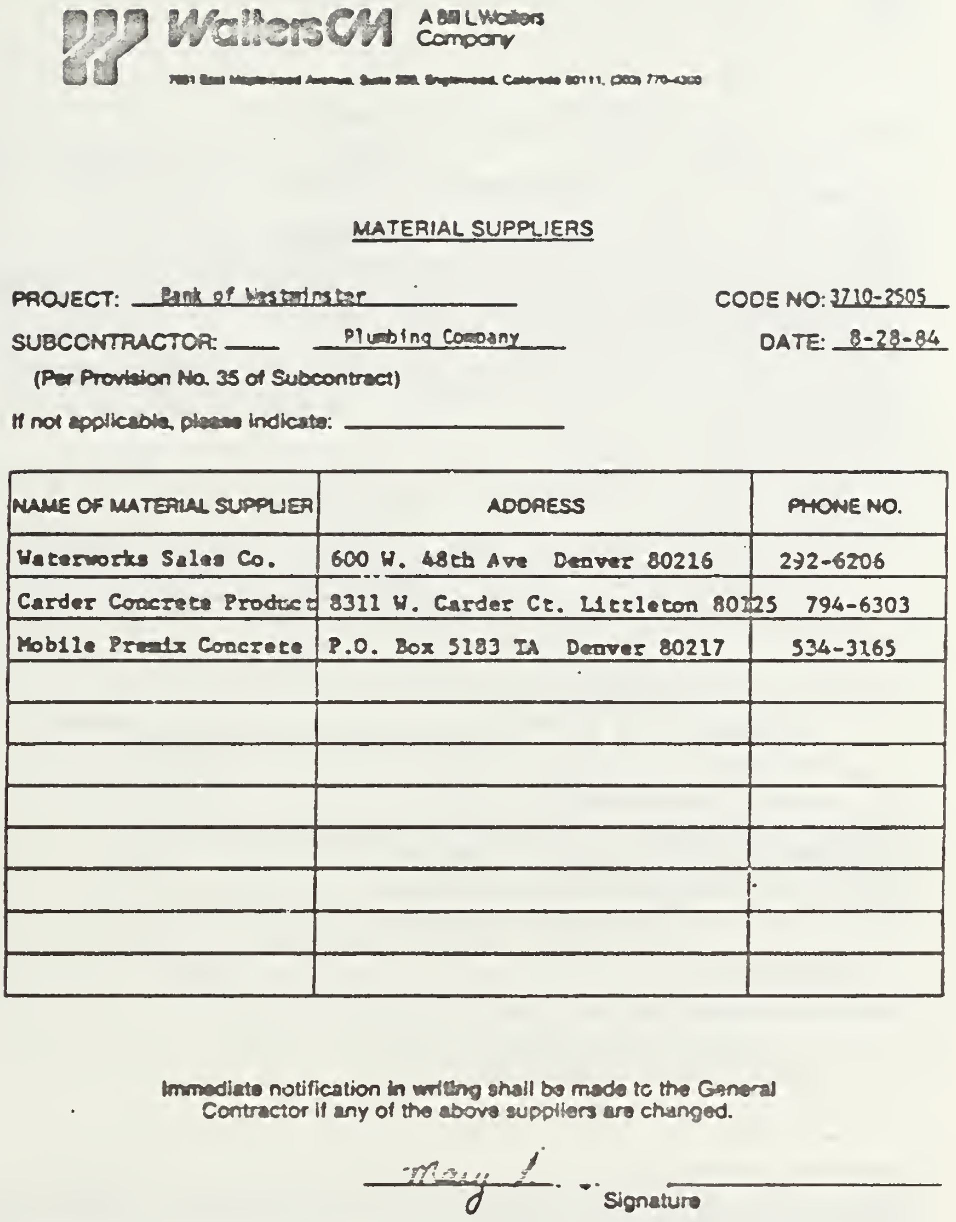
WALTERS CONSTRUCTION MANAGEMENT, INC.

John K. Fox, Jr.
Project Manager

JKF/jpl

WaltersCM A Bill L Walters Company

FIG. 3



WaltersCM A Bill L Walters Company

MATERIAL SUPPLIERS

PROJECT: Bank of Westminster

CODE NO: 3710-2505

SUBCONTRACTOR: Plumbing Company

DATE: 8-28-84

(Per Provision No. 35 of Subcontract)

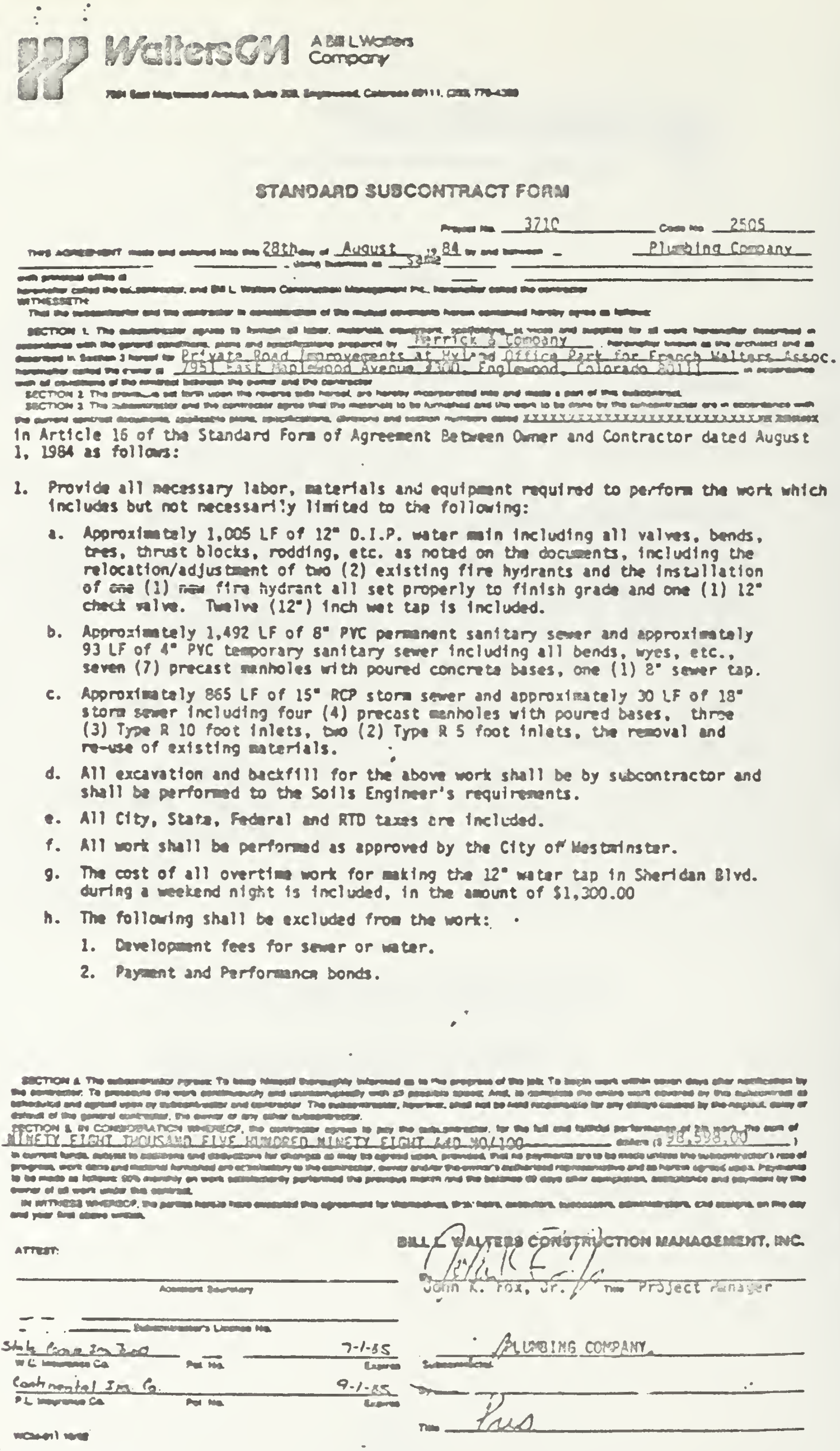
If not applicable, please indicate: ______

NAME OF MATERIAL SUPPLIER	ADDRESS	PHONE NO.
Waterworks Sales Co.	600 W. 48th Ave Denver 80216	292-6206
Carder Concrete Product	8311 W. Carder Ct. Littleton 80125	794-6303
Mobile Premix Concrete	P.O. Box 5183 TA Denver 80217	534-3165

Immediate notification in writing shall be made to the General Contractor if any of the above suppliers are changed.

Signature

FIG. 4



WaltersCM A Bill L Walters Company

STANDARD SUBCONTRACT FORM

Project No. 3710 Code No. 2505

THIS AGREEMENT made and entered into this 28th day of August 19 84 by and between Plumbing Company doing business as Same

hereinafter called the subcontractor, and Bill L. Walters Construction Management Inc., hereinafter called the contractor

WITNESSETH:

SECTION 1. The subcontractor agrees to furnish all labor, materials, equipment, ... prepared by Merrick & Company ... for Private Road Improvements at Hyland Office Park for French Walters Assoc. hereinafter called the owner at 7951 East Maplewood Avenue #300, Englewood, Colorado 80111 ... with all conditions of the contract between the owner and the contractor

SECTION 2. ... are hereby incorporated into and made a part of this subcontract.

SECTION 3. The subcontractor and the contractor agree that the materials to be furnished and the work to be done by the subcontractor are in accordance with the current contract documents, applicable plans, specifications, divisions and section numbers dated XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX in Article 16 of the Standard Form of Agreement Between Owner and Contractor dated August 1, 1984 as follows:

1. Provide all necessary labor, materials and equipment required to perform the work which includes but not necessarily limited to the following:
   - a. Approximately 1,005 LF of 12" D.I.P. water main including all valves, bends, tees, thrust blocks, rodding, etc. as noted on the documents, including the relocation/adjustment of two (2) existing fire hydrants and the installation of ~~one~~ (1) ~~new~~ fire hydrant all set properly to finish grade and one (1) 12" check valve. Twelve (12") inch wet tap is included.
   - b. Approximately 1,492 LF of 8" PVC permanent sanitary sewer and approximately 93 LF of 4" PVC temporary sanitary sewer including all bends, wyes, etc., seven (7) precast manholes with poured concrete bases, one (1) 8" sewer tap.
   - c. Approximately 865 LF of 15" RCP storm sewer and approximately 30 LF of 18" storm sewer including four (4) precast manholes with poured bases, three (3) Type R 10 foot inlets, two (2) Type R 5 foot inlets, the removal and re-use of existing materials.
   - d. All excavation and backfill for the above work shall be by subcontractor and shall be performed to the Soils Engineer's requirements.
   - e. All City, State, Federal and RTD taxes are included.
   - f. All work shall be performed as approved by the City of Westminster.
   - g. The cost of all overtime work for making the 12" water tap in Sheridan Blvd. during a weekend night is included, in the amount of $1,300.00
   - h. The following shall be excluded from the work:
     1. Development fees for sewer or water.
     2. Payment and Performance bonds.

SECTION 4. The subcontractor agrees: To keep himself thoroughly informed as to the progress of the job. ...

SECTION 5. IN CONSIDERATION WHEREOF, the contractor agrees to pay the subcontractor, for the full and faithful performance of his work, the sum of NINETY EIGHT THOUSAND FIVE HUNDRED NINETY EIGHT AND NO/100 dollars ($ 98,598.00) ...

IN WITNESS WHEREOF, the parties hereto have executed this agreement ...

BILL L. WALTERS CONSTRUCTION MANAGEMENT, INC.

ATTEST:

Assistant Secretary

By John K. Fox, Jr. Title Project Manager

Subcontractor's License No.

State Comp Ins Fund ... 7-1-85
W.C. Insurance Co. Pol. No. Expires

Continental Ins. Co. ... 9-1-85
P.L. Insurance Co. Pol. No. Expires

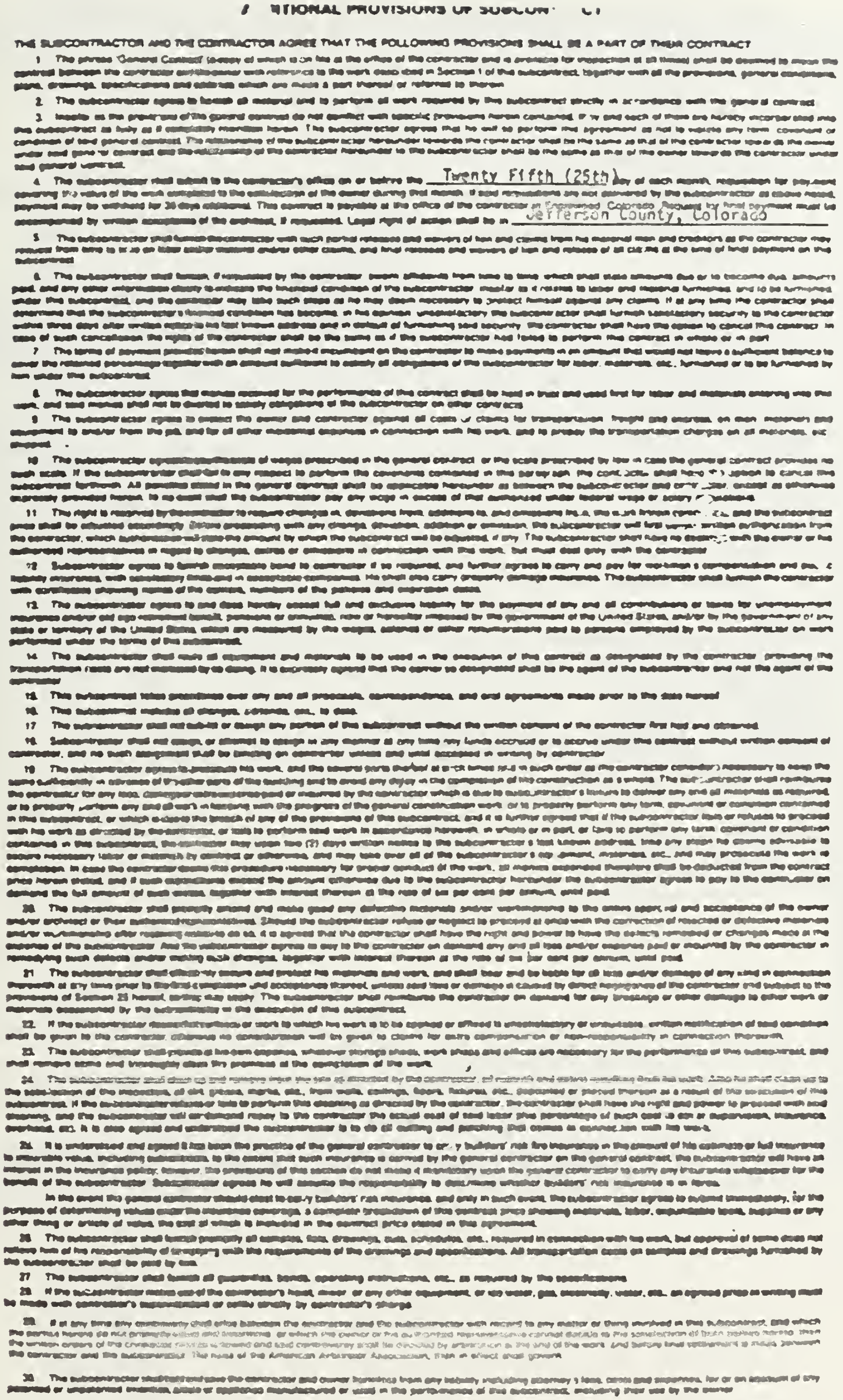
PLUMBING COMPANY
Subcontractor

By

Title Pres

WCM-011 10/82

FIG. 5



ITIONAL PROVISIONS OF SUBCON CT

THE SUBCONTRACTOR AND THE CONTRACTOR AGREE THAT THE FOLLOWING PROVISIONS SHALL BE A PART OF THEIR CONTRACT

Twenty Fifth (25th)

Jefferson County, Colorado

FIG. 5

31. The subcontractor shall not place on the work any equipment of which he is not bona fide owner unless he obtains written permission from the contractor.

32. When labor only is furnished by the subcontractor, Subcontractor agrees to use contractor's materials without waste, and agrees to pay for any material ruined or damaged on account of negligence or carelessness. Unless otherwise stated, when material is furnished by contractor, same shall be delivered to the curb line of the building which shall constitute delivery. Quantities of material used daily shall be reported to contractor's superintendent, and empty sacks bundled and placed in contractor's warehouse.

33. The subcontractor agrees to cooperate to the fullest extent with contractor's superintendent in charge, and further agrees to remove any workman immediately that are not satisfactory to contractor or architect.

34. If the project is government or government aid, it is agreed that all requirements with regard to labor priority, maximum hours of labor, scales of wages to all skilled, semi-skilled, and unskilled workmen, and the method of payment or any other provision, will be fulfilled.

Everything required of the contractor in this connection is applicable to this subcontract.

Any and all certificates of compliance required by the government will be furnished on demand.

35. Each subcontractor must submit on a form provided by the contractor a list of all subcontractor's suppliers of labor and materials whose quotations he has used in the preparation of his bid and whose services he proposes to use in construction of the project.

36. The subcontractor is an independent contractor under the terms of this contract, notwithstanding the fact that the contractor reserves the right to supervise the work and to make suggestions relative to the satisfactory completion thereof.

37. Time is of the essence of this contract.

38. The subcontractor hereby represents to the contractor that he is, and will comply, in the course of this contract, with all federal law, state law and applicable county ordinances relating to workmen's compensation insurance, safety and health, wage and hour laws, state sales and use taxes, federal excise and transportation taxes, local building and zoning codes and federal and state withholding taxes, and any fine or penalty assessed against the contractor caused by violation done by the subcontractor shall be paid by the subcontractor.

39. Subcontractor hereby agrees to defend at its own cost and to indemnify and hold harmless the contractor, its agents and employees from any and all liability, damages, losses, claims and expenses, howsoever caused, resulting directly or indirectly from or connected with the performance of this agreement irrespective of whether such liability, damages, losses, claims and/or expenses were actually or allegedly caused through the negligence of contractor or any of its agents, employees or other subcontractors, excepting only such liability, damages, losses, claims and expenses as shall have been occasioned by the sole negligence of the contractor, its agents and employees.

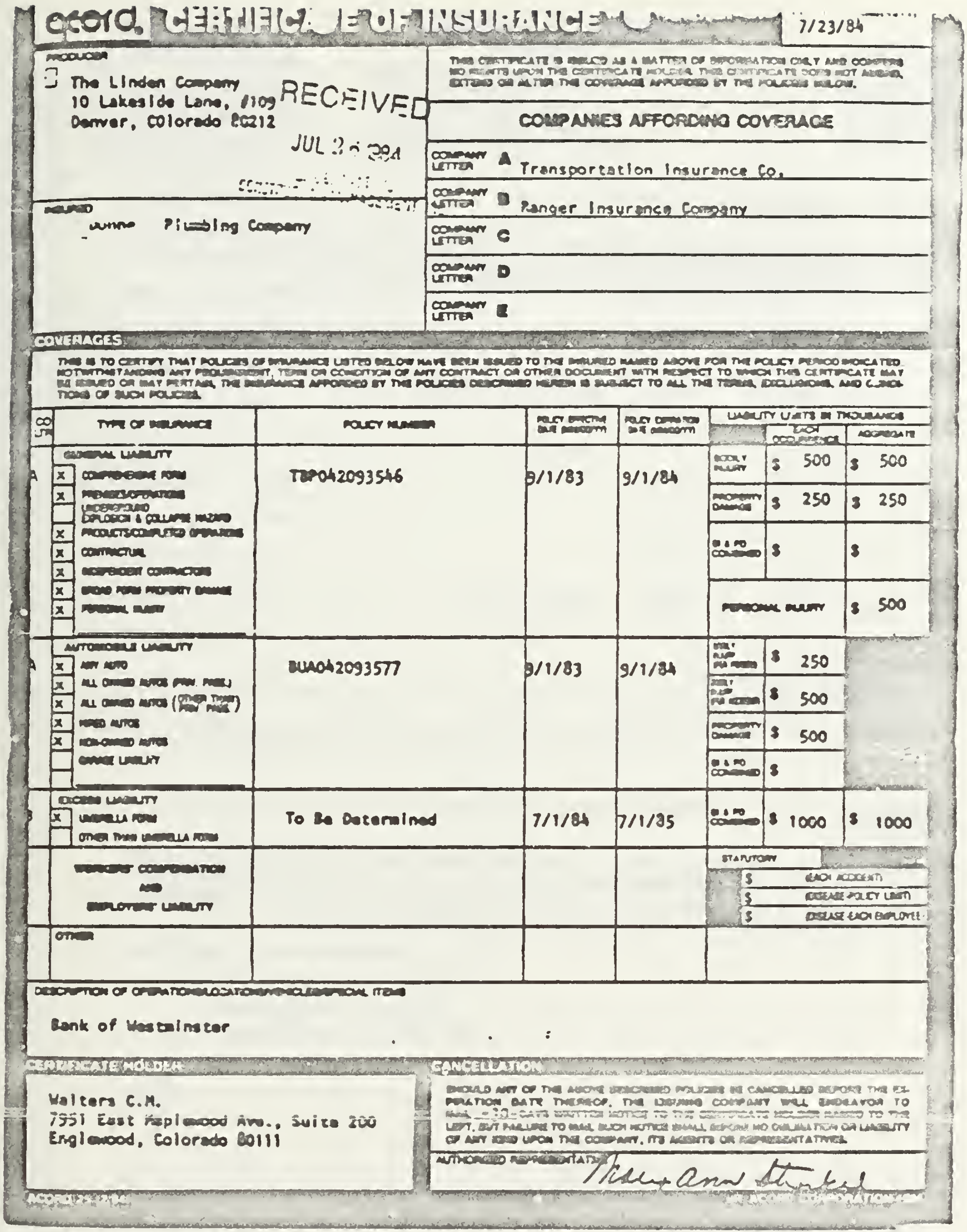
40. Although drawn by the contractor, this agreement shall, in the event of any dispute over its meaning or application, be interpreted fairly and reasonably and neither more strongly for or against either party.

41. Notwithstanding all other provisions of this subcontract, Subcontractor agrees to submit partial payment requests in such form and copy as Contractor may require, and to deliver same to Contractor's general office by the twenty-fifth (25th) day of the month. Subcontractor agrees that his monthly partial payment request will include only work and materials in place or delivered to the site or stored off-site under conditions satisfactory to the Contractor prior to the last day of the month. Monthly partial payments are due not later than thirty (30) days after due date for partial payment requests and shall be made within five (5) days of receipt of payment from the Owner. When final payment is due, Subcontractor shall submit invoice for final payment, clearly marked "Final Payment".

42. Subcontractor shall be responsible for clean-up of rubbish and debris resulting from his work on a daily basis, all as verbally directed by the general contractor.

43. Subcontractor agrees that, in the event of any picket or other form of labor dispute at the construction site, whether that dispute or picket is in connection with the Contractor, Subcontractor, or any other contractor or subcontractor on this construction site, Subcontractor will continue to perform the work required herein without interruption or delay. In the event Subcontractor fails to continue the performance of the work included herein, without interruption or delay, because of such picket or other form of labor dispute, the rights accorded the Contractor by Provision #19 elsewhere herein shall apply.

FIG. 5



ACORD CERTIFICATE OF INSURANCE 7/23/84

PRODUCER

The Linden Company
10 Lakeside Lane, #109
Denver, Colorado 80212

RECEIVED
JUL 26 1984

INSURED

unne Plumbing Company

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

COMPANIES AFFORDING COVERAGE

COMPANY LETTER A Transportation Insurance Co.
COMPANY LETTER B Ranger Insurance Company
COMPANY LETTER C
COMPANY LETTER D
COMPANY LETTER E

COVERAGES

THIS IS TO CERTIFY THAT POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS, AND CONDITIONS OF SUCH POLICIES.

CO LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIABILITY LIMITS IN THOUSANDS	EACH OCCURRENCE	AGGREGATE
	GENERAL LIABILITY						
A	☒ COMPREHENSIVE FORM	TBP042093546	9/1/83	9/1/84	BODILY INJURY	$ 500	$ 500
	☒ PREMISES/OPERATIONS				PROPERTY DAMAGE	$ 250	$ 250
	☐ UNDERGROUND EXPLOSION & COLLAPSE HAZARD						
	☒ PRODUCTS/COMPLETED OPERATIONS				BI & PD COMBINED	$	$
	☒ CONTRACTUAL						
	☒ INDEPENDENT CONTRACTORS						
	☒ BROAD FORM PROPERTY DAMAGE						
	☒ PERSONAL INJURY				PERSONAL INJURY		$ 500
	AUTOMOBILE LIABILITY						
A	☒ ANY AUTO	BUA042093577	9/1/83	9/1/84	BODILY INJURY (PER PERSON)	$ 250	
	☒ ALL OWNED AUTOS (PRIV. PASS.)				BODILY INJURY (PER ACCIDENT)	$ 500	
	☒ ALL OWNED AUTOS (OTHER THAN PRIV. PASS.)				PROPERTY DAMAGE	$ 500	
	☒ HIRED AUTOS						
	☒ NON-OWNED AUTOS						
	☐ GARAGE LIABILITY				BI & PD COMBINED	$	
	EXCESS LIABILITY						
B	☒ UMBRELLA FORM	To Be Determined	7/1/84	7/1/85	BI & PD COMBINED	$ 1000	$ 1000
	☐ OTHER THAN UMBRELLA FORM						
	WORKERS' COMPENSATION AND EMPLOYERS' LIABILITY				STATUTORY		
					$ (EACH ACCIDENT)		
					$ (DISEASE-POLICY LIMIT)		
					$ (DISEASE-EACH EMPLOYEE)		
	OTHER						

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/SPECIAL ITEMS

Bank of Westminster

CERTIFICATE HOLDER

Walters C.M.
7951 East Maplewood Ave., Suite 200
Englewood, Colorado 80111

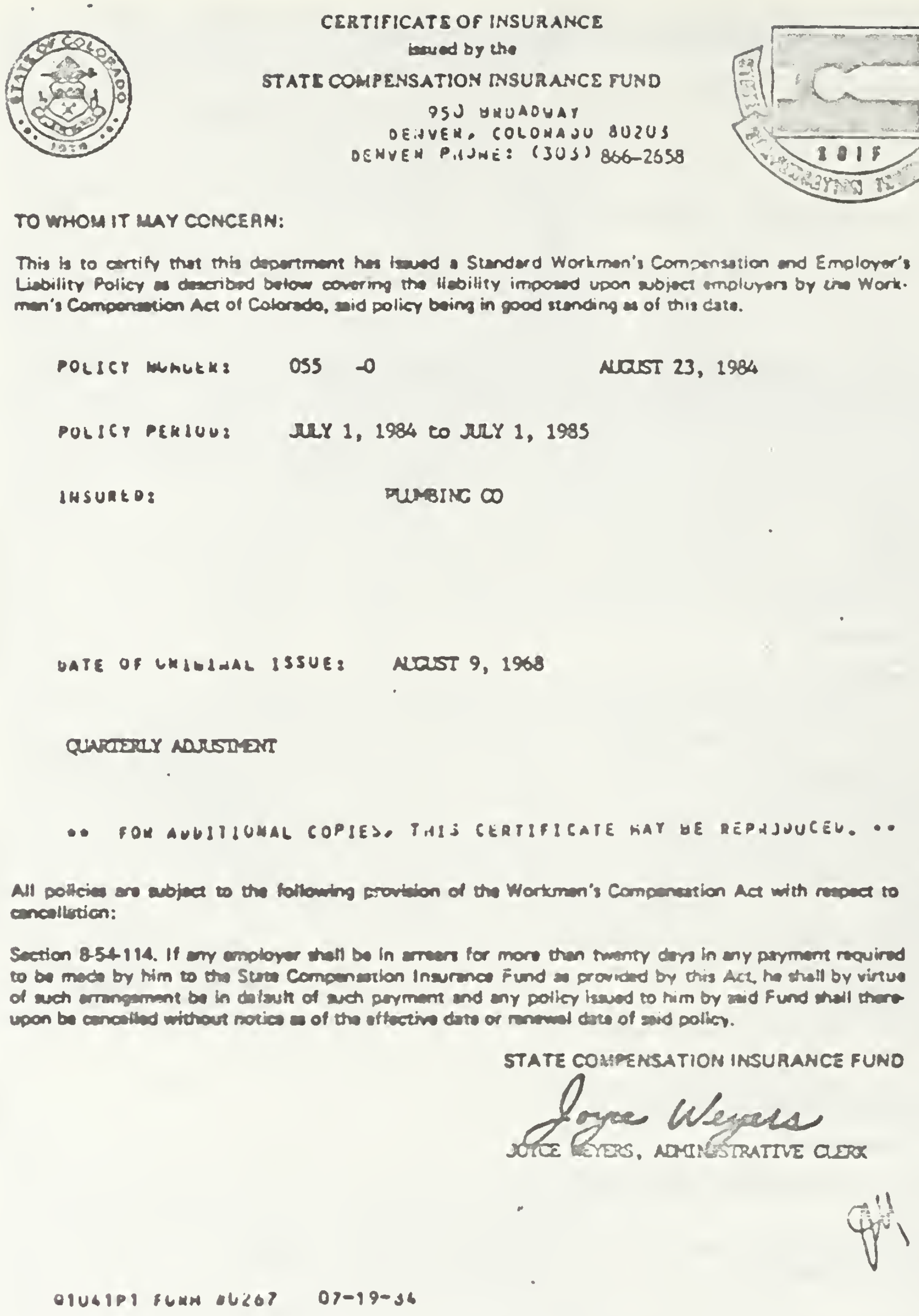
CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE COMPANY, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE Mary Ann Strobel

ACORD [illegible] ACORD CORPORATION [illegible]

FIG. 6



CERTIFICATE OF INSURANCE
issued by the
STATE COMPENSATION INSURANCE FUND

950 BROADWAY
DENVER, COLORADO 80203
DENVER PHONE: (303) 866-2658

TO WHOM IT MAY CONCERN:

This is to certify that this department has issued a Standard Workmen's Compensation and Employer's Liability Policy as described below covering the liability imposed upon subject employers by the Workmen's Compensation Act of Colorado, said policy being in good standing as of this date.

POLICY NUMBER: 055 -0 AUGUST 23, 1984

POLICY PERIOD: JULY 1, 1984 to JULY 1, 1985

INSURED: PLUMBING CO

DATE OF ORIGINAL ISSUE: AUGUST 9, 1968

QUARTERLY ADJUSTMENT

** FOR ADDITIONAL COPIES, THIS CERTIFICATE MAY BE REPRODUCED. **

All policies are subject to the following provision of the Workmen's Compensation Act with respect to cancellation:

Section 8-54-114. If any employer shall be in arrears for more than twenty days in any payment required to be made by him to the State Compensation Insurance Fund as provided by this Act, he shall by virtue of such arrangement be in default of such payment and any policy issued to him by said Fund shall thereupon be cancelled without notice as of the effective date or renewal date of said policy.

STATE COMPENSATION INSURANCE FUND

Joyce Weyers
JOYCE WEYERS, ADMINISTRATIVE CLERK

01041P1 FORM #0267 07-19-84

FIG. 7

Walters CM
A Bill L. Walters Company
7951 E. Maplewood Av., #200
Englewood, Colorado 80111

BUDGET COST ESTIMATE
CitiCorp Diners Club
Denver, Colorado
By: JRM 9/28/84

Proj # 844-0000
SQ FT 250,000
09/24/84
Level 1 Report

Code	Description	Labor	Material	Subs/oth	Total	$/SF
.1	ARCHITECTURAL/STRUCTURAL			7692728	7,692,729	30.77
.2	MECHANICAL SYSTEMS			3498150	3,498,150	13.99
.3	ELECTRICAL SYSTEMS			2972900	2,972,900	11.89
.4	SPECIAL SYSTEMS					
.5	SPECIAL EQUIPMENT					
.6	SPECIAL FINISHES					
.7	SITEWORK/UTILITIES			1372340	1,372,340	5.49
.8	GENERAL CONDITIONS			805269	805,269	3.22
.9	DESIGN OVERHEAD			1360000	1,360,000	5.44
1.0	PERFORMANCE BOND			78057	78,057	.31
1.1	DESIGN/BUILD FEE			450000	450,000	1.80
	Project Total			18229444	18,229,444	72.92

FIG. 8

Walters CM
A Bill L. Walters Company
7951 E. Maplewood Av., #200
Englewood, Colorado 80111

BUDGET COST ESTIMATE
CitiCorp Diners Club
Denver, Colorado
By: JRM 9/28/84

Proj # 844-0000
SQ FT 250,000
09/24/84
Level 2 Report

Code	Description	Labor	Material	Subs/oth	Total	$/SF
.1	ARCHITECTURAL/STRUCTURAL					
.101	Clear at Building			305852	305,852	1.22
.102	Foundation System			342764	342,764	1.37
.103	Structural System			2274730	2,274,730	9.10
.104	Slab-On-Ground			247034	247,034	.99
.105	Roofing System			296367	296,367	1.19
.106	Exterior Walls			1589940	1,589,940	6.36
.107	Vertical Circulation			236500	236,500	.95
.108	Interior Walls			625669	625,669	2.50
.109	Floor Finishes			1160818	1,160,818	4.64
.110	Ceiling Finishes			298240	298,240	1.19
.111	Wall & Column Finishes			185844	185,844	.74
.112	Specialty Items			128970	128,970	.52
	TOTAL			7692728	7,692,728	30.77
.2	MECHANICAL SYSTEMS					
.201	Heating, Vent & A.C.			2921050	2,921,050	11.68
.202	Plumbing System			350200	350,200	1.40
.203	Fire Protection System			226900	226,900	.91
.204	Control System					
.205	Special Mechanical					
.206	Temporary Heating					
	TOTAL			3498150	3,498,150	13.99
.3	ELECTRICAL SYSTEMS					
.301	Fixtures & Lamps					
.302	Circuits & Devices					
.303	Main Feeders & Secondary					
.304	Switchgear & Transformer					
.305	Special Electrical					
.306	Temporary Electrical					
.307	Electrical Complete			2972900	2,972,900	11.89
	TOTAL			2972900	2,972,900	11.89

FIG. 8

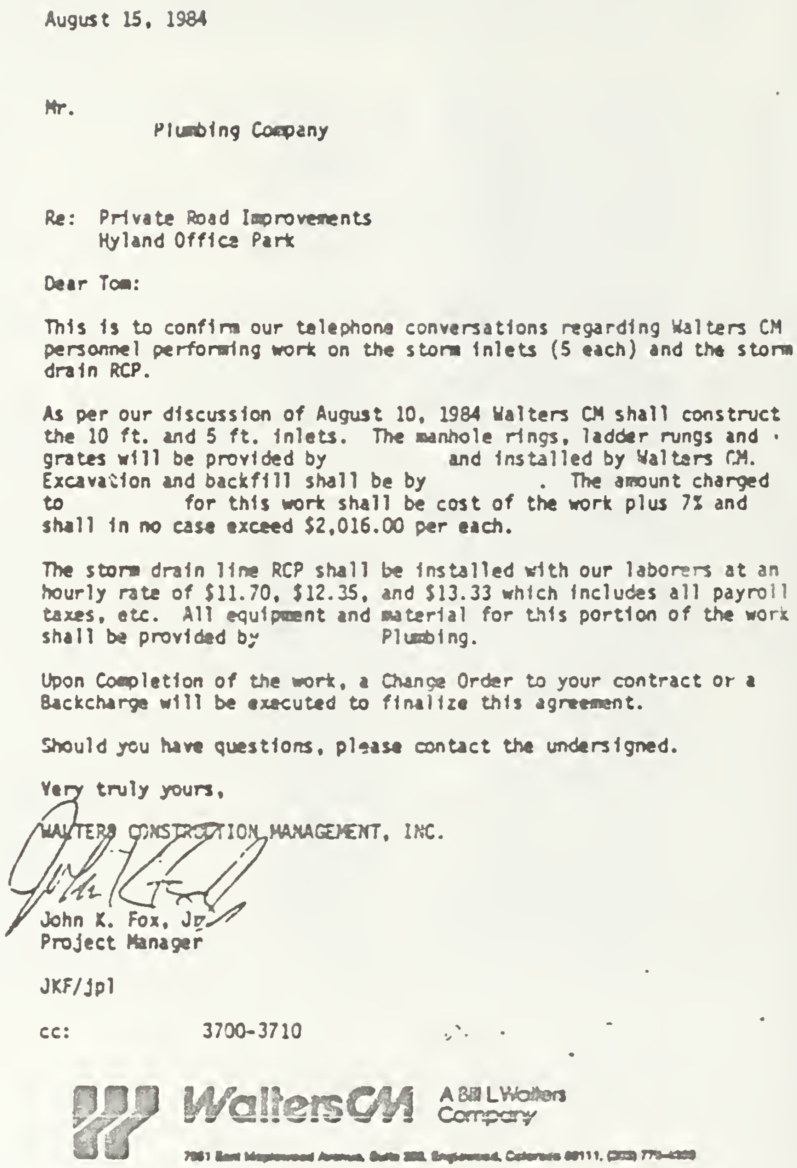
Walters CM
A Bill L. Walters Company
7951 E. Maplewood Av., #200
Englewood, Colorado 80111

BUDGET COST ESTIMATE
CitiCorp Diners Club
Denver, Colorado
By: JRM 9/28/84

Proj # 844-0000
SQ FT 250,000
09/24/84
Level 3 Report

AC	Description	Quan.	UN	Labor	Material	Subs/oth	Total
.101 Clear at Building							
	Clear&Grub @ Bldg.	2000.00	CY			.50	1,000
	Mass Bldg. Excav.	26000.00	CY			2.50	65,000
	Grade Beam Excav.	2100.00	CY			4.00	8,400
	Elev. Pit Excav.	60.00	CY			8.00	480
	Column Cap Excav.		CY				
	Backfill & Compact	11394.00	CY			8.50	96,849
	4Ft. Struct. Fill	15852.00	CY			6.00	95,112
	Soil Investigation						
	Compaction Tests	20.00	EA			150.00	3,000
	Perimeter Drainage	2000.00	LF			16.00	32,000
	Under Floor Drain		LF				
	Clean Walks/Street	1.00	LS			1200.00	1,200
	Cooling Tower Sump	192.00	CY			8.00	1,536
	Reces'd.Chiller Rm	510.00	CY			2.50	1,275
	TOTAL					305852	305,852
.102 Foundation System							
	18" Drilled Piers	16.00	EA			700.00	11,200
	30" Drilled Piers	158.00	EA			1050.00	165,900
	36" Drilled Piers		EA				
	Pilasters @ Wall	58.00	EA			300.00	17,400
	Pier Caps		EA				
	Equip. Curbs	3500.00	Sf			5.00	17,500
	Grade Beams	7200.00	SF			11.50	82,800
	Sump Pits	1.00	EA			500.00	500
	Cooling Tower Sump	600.00	SF			11.50	6,900
	Elevator Pits	467.00	SF			11.50	5,371
	Waterproofing	20200.00	SF			.60	12,120
	Perim. Insulation	1260.00	SF			.80	1,008
	Winter Protection	1.00	LS			12000.00	12,000
	Cool Tower Fndn.	130.00	SF			11.50	1,495
	Generator Pad	1200.00	SF			3.75	4,500
	Transformer Pad	72.00	SF			3.75	270
	Concrete Testing	1.00	LS			2000.00	2,000
	Pier Inspection	3.00	WK			600.00	1,800
	TOTAL					342764	342,764
.103 Structural System							
	Structural Steel	1000.00	TN			1050.00	1,050,000

FIG. 8



August 15, 1984

Mr.
Plumbing Company

Re: Private Road Improvements
Hyland Office Park

Dear Tom:

This is to confirm our telephone conversations regarding Walters CM personnel performing work on the storm inlets (5 each) and the storm drain RCP.

As per our discussion of August 10, 1984 Walters CM shall construct the 10 ft. and 5 ft. inlets. The manhole rings, ladder rungs and grates will be provided by and installed by Walters CM. Excavation and backfill shall be by . The amount charged to for this work shall be cost of the work plus 7% and shall in no case exceed $2,016.00 per each.

The storm drain line RCP shall be installed with our laborers at an hourly rate of $11.70, $12.35, and $13.33 which includes all payroll taxes, etc. All equipment and material for this portion of the work shall be provided by Plumbing.

Upon Completion of the work, a Change Order to your contract or a Backcharge will be executed to finalize this agreement.

Should you have questions, please contact the undersigned.

Very truly yours,

WALTERS CONSTRUCTION MANAGEMENT, INC.

John K. Fox, Jr.
Project Manager

JKF/jpl

cc: 3700-3710

WaltersCM A Bill L Walters Company

FIG. 9

[illegible] Company

[illegible], Colorado 80111, [illegible]

NOTIFICATION OF BACKCHARGE

SUBCONTRACTOR:

Plumbing Company

Date 8-27-84 Project Private Road Improvement @ Hyland Office Park

Subcontract Date 8-27-84

Subcontract # 3710-2505

Backcharge Cost Code 19000

Cost Code Description Utilities

Gentlemen:

Under the terms of the above referenced subcontract agreement, Paragraphs 19, 21, & 24, Walters CM is exercising its right and proceeding with the following work:

Per mutual agreement of both parties - Barnekow Construction will provide P & H tracked backhoe for the purpose of excavating the water and sewer lines for Plumbing. The cost of $60 per hour standard rate shall be deducted from the Contract for all tickets signed by Walters CM and Plumbing.

The above work is being completed on a time & material basis. Upon completion, a formal backcharge to your subcontract will be issued. The backcharge will be supported with documented costs.

Bill L. Walters Construction Management, Inc.

By

John K. Fox, Jr./Project Manager

JKF/jpl

White - Subcontractor • Yellow - Project Manager • Pink - Accounting

[illegible]

FIG. 10

APPENDIX B

DAILY LOGS

[illegible] Company

7331 East Maplewood Avenue, Suite 200, Englewood, Colorado 80111, (303) 770-4300

DAILY LOG

PROJECT ~~[illegible] Bank~~ Bank of Westminster DATE 7-23-84

WEATHER CONDITIONS SIGNATURE Greg L. O'Neal

Temperature: High 95 Low

Precipitation: Inches Rain – Snow –

Condition: Clear X Partly Cloudy – Overcast –

SAFETY

Accidents: Personal – Equipment – Public Liability – Property Damage –

Explain:

MATERIALS

Cost Code	Ticket No.

SUBCONTRACTORS

Company	No Men
1 SURVEY CREW	- 2
2 WCM	- 5
3.	
4.	
5.	
6.	
7.	
8.	

EQUIPMENT RENTAL	DATE IN	DATE OUT	SUPPLIER	REMARKS
BACKHOE LOADER RENT	7/23	7/23	POWER RENTAL	Remove Fence

1) REMOVED SPLIT RAIL & STOCKADE FENCE. - fence to Arvada; Rail to yard
2) REMOVED 5 SIGNS
3) REMOVED VALVE BOXES, CHECK VALVES, SPRINKLER HEADS
4) 11:00 Tom O'DONNEL MEETING ON SITE WORK. SCHEDULE 7/30/84
5) SURVEYORS SET STATIONS: CUT & FILL ON PERMANENT ROAD.
6) BLUE STAKES CABLE, PHONE, GAS, ELECTRIC SHOWED UP. Locations OK
7) CALLED REPPETTS LANDSCAPE. DIDN'T SHOW UP TODAY.
8) TALKED TO MURPHY EXCAVATION. CONFIRM WEDNESDAY START.
9) WCM YARD - USED 2 TRUCKS 8 HRS FROM 'HEATER' FOR Fence removal - Hauled fence to Arvada.
10) WORKED CREW 8 HRS.
11) Removed 1 flagpole - To yard
12) Removed 4 [illegible] wheel stops - Haul to yard

JR/8hr PAUL/8hr KEVIN/8hr BRIAN/8hr ED/8hr

WHITE - Project Manager CANARY - Superintendent

WCM-015

Watterson Company
7951 East Maplewood Avenue, Suite 200, Englewood, Colorado 80111, (303) 770-4300

DAILY LOG

PROJECT WESTMINSTER BANK DATE 7-30-84

WEATHER CONDITIONS SIGNATURE Roger S. O'Neal

Temperature: High 95 Low 62

Precipitation: Inches — Rain — 1" Snow —

Condition: Clear X Partly Cloudy X Overcast —

SAFETY

Accidents: Personal — Equipment — Public Liability — Property Damage

Explain:

MATERIALS

Cost Code	Ticket No.

SUBCONTRACTORS

Company	No Men
1. WCM - 2	ODONNEL - 1 - FMAN
2. SURVEY - 3 HALF DAY	1 - LAB
3. Murphy - BLADE/OPER	1 - BACKHOE
4. 613 /OPER	
5.	
6. 966 LOADER/OPER	
7. SHEEPSFOOT 1/2 DAY	
8. 980 LOADER 1/4 DAY	

EQUIPMENT RENTAL	DATE IN	DATE OUT	SUPPLIER	REMARKS
—				
—				
—				

1) WASSANAAR SHOWED UP FOR COMPACTION TESTS.

2) ODONNEL SHOWED UP. JUST MOVED PIPE IN. REMOVED 30'LF OF EXISTING 18" RCP @ 92 & SHERIDAN. BROUGHT OUT LITTLE JD HOE. THEY ARE BRINGING OUT A TRACK HOE.

3) TALKED TO AL WASSANAAR ON USING SQUEEGE IN A CONFINED TRENCH FOR UTILITY WORK. NO PROBLEM AS LONG AS IT DOESN'T DRAIN INTO THE BUILDING.

4) FRED MURPHY HAS 8 HRS EXTRA ON 16G BLADE FOR BRINGING IN EXTRA FILL IN ROAD DUE TO SURVEY PROBLEMS ON GRADE.

5) EXISTING DETENTION POND ON CORNER NEEDS TO BE MUCKED OUT. USING BARMESON BACKHOE. CHEAPER THAN MURPHY. MURPHY WANTED $105/HOUR; $210 MOBILIZATION. BARNESON $60/HR.

6) AL WASSANAAR APPROVED USING ASPHALT IN FILL @ DETENTION POND.

7) STARTED TO DETOUR TRAFFIC ON TEMPORARY ROAD AND TEAR UP BLDG. SITE. ON SCHEDULE FOR CAISSONS ON MONDAY.

8) WE HAVE RECEIVED RAIN EVERY NIGHT FOR PAST WEEK. REAL PROBLEM WITH EXISTING DETENTION POND. BUILDING CORNER RIGHT OVER POND.

WHITE - Project Manager CANARY - Superintendent

WCM-015

[illegible] Company

7881 East Maplewood Avenue, Suite 200, Englewood, Colorado 80111, (303) 770-4300

DAILY LOG

PROJECT WESTMINSTER BANK DATE 8/6/84 MONDAY

WEATHER CONDITIONS SIGNATURE [illegible] L. O'Neal

Temperature: High 90 Low 60

Precipitation: Inches 1/2" Rain X Snow

Condition: Clear Partly Cloudy YES Overcast

SAFETY

Accidents: Personal — Equipment — Public Liability — Property Damage —

Explain:

MATERIALS	
Cost Code	Ticket No.

SUBCONTRACTORS

Company	No. Men
1. MEREDITH - RIG/2 OPER	
2. WCM - 6	
3. SURVEY - 2	
4. Denver Reel - 3	
5. O'DONNEL - 1 - 4MAN	
6. 3 - LAB	
7. 1 - OPER/HOE	
8.	

EQUIPMENT RENTAL	DATE IN	DATE OUT	SUPPLIER	REMARKS
NONE				

1) STARTED CAISSONS.	DIAMETER	LOCATION	DRILLING LENGTH	CONCRETE
MEREDITH.	36"	3.8 - G	30'	7.51
	36"	5 - G	30'	7.51
	36"	8 - G	$32^{\underline{6}}$	8.16
	36"	10 - G	$32^{\underline{6}}$	8.16
	30"	10 - D	$31^{\underline{6}}$	5.09
	30"	10 - C	$32^{\underline{0}}$	5.18
	TOTAL		$188^{\underline{6}}$ LF	41.61 CY

2) POURED $44^{\underline{0}}$ CY. 5% WASTE OVER.

3) DENVER REEL 3/4 DONE WITH CAISSON CAGES.

4) TALKED TO MURPHY ON GETTING LOADER OUT HERE. PROBLEM. THURSDAY IS BEST. NEED WEDNESDAY.

5) O'DONNEL ON 8" SANITARY UP TO MANHOLE #5.

WHITE - Project Manager CANARY - Superintendent

WCM-018

Walterson Company

7951 East Maplewood Avenue, Suite 330, Englewood, Colorado 80111, (303) 770-4300

DAILY LOG

PROJECT WESTMINSTER BANK　DATE 8/13/84

WEATHER CONDITIONS　SIGNATURE Roger O'Neil

Temperature: High 95 Low 60°

Precipitation: Inches – Rain – Snow –

Condition: Clear Yes Partly Cloudy – Overcast –

SAFETY

Accidents: Personal – Equipment – Public Liability – Property Damage –

Explain:

MATERIALS	
Cost Code	Ticket No.

SUBCONTRACTORS

Company　No. Men

1. WCM - 6　Denver Rent - 3
2. Shrum - 2
3. O'Donnel - 1 - 4 MAN
4. 3 - LAB
5. 1 - OPER/HOE
6. Meredith - 1 - 4 MAN
7. 1 - 216/OPER
8. 1 - OILER

EQUIPMENT RENTAL	DATE IN	DATE OUT	SUPPLIER	REMARKS

1) HELD SAFETY MEETING.
2) MEREDITH ON 5TH DAY OF DRILLING. DUG THE 4-MAN BACK ON JOB.
3) O'DONNEL ON 12" WATER. UP TO STATION 4+240. DISCUSSED STARTING 15" RCP STORM ON WEDNESDAY. NO MANPOWER SO WORKING OUT A DEAL WITH OUR LABORS ~~[illegible]~~ DOING WORK.
4) TALKED TO SUBURBAN ON CONCRETE CONSISTENCY. SLUMP & AIR CHANGE. NEED TO CLEAN MIXER DRUMS. YIELDS PER TRUCK RUNNING SHORT.
5) ORDERED ~~[illegible]~~ REBAR FOR INLETS FROM CONCRESCO. DELIVERY A.M. ON 8/26/84.

DIA	LOCATION	DRILL LENGTH	EST. CONCRETE
36"	1-E	27±	7.31
36"	1-F	27±	7.08
24"	PLAZA	17-	2.50
24"	PLAZA	18-	2.70
24"	PLAZA	17±	2.60
24"	2-E	16±	1.90
42"	4-D	38±	13.60
36"	3-D	33±	8.70
TOTALS →		194±	46.29

WHITE - Project Manager　CANARY - Superintendent

WCM-015

WaltersCM A Bill L Walters Company

7851 East Maplewood Avenue, Suite 200, Englewood, Colorado 80111, (303) 770-4300

DAILY LOG

PROJECT Westminster Bank DATE AUGUST 28, 198[illegible]

WEATHER CONDITIONS SIGNATURE

Temperature: High 90 Low 60

Precipitation: Inches — Rain — Snow —

Condition: Clear YES Partly Cloudy — Overcast —

SAFETY

Accidents: Personal ____ Equipment ____ Public Liability ____ Property Damage ____

Explain: ____

MATERIALS

Cost Code	Ticket No.

SUBCONTRACTORS

Company No. Men

1 O'DONNEL - 1-FMAN
2 1-LAB
3 2-HOP/OPER
4 WCM - 8
5 FORMBUILDERS - 4
6
7. D&D - 8
8

EQUIPMENT RENTAL	DATE IN	DATE OUT	SUPPLIER	REMARKS

1) D&D STARTED CURB & GUTTER. POURED 400 LF

2) STARTED BACKFILL ON TIE BEAMS.

3) POURED 52 CY ON TIE BEAMS @ TOWER 1 & Elevator.

4) Reviewed Schedule with Murphy. Saw no problem but will have to see. HARD TO HOLD MURPHY TO A SCHEDULE. TRY USING SPEED MEMOS.

5) O'Donnel Tieing in Check valve & fire hydrant. No problems yet. Should be buttoned up & tagged in by Wednesday.

6) Scheduled VAULT STEEL FOR DELIVERY ON 8/29 @ 7:00.

7) O'DONNEL IS USING OUR LABORS FOR BACKFILL AROUND THE INLETS.

WHITE - Project Manager CANARY - Superintendent

WCM-015

WaltersCM A Bill L. Walters Company

7951 East Maplewood Avenue, Suite 200, Englewood, Colorado 80111, (303) 770-4300

DAILY LOG

PROJECT WESTMINSTER BANK DATE 9/4/84

SIGNATURE

WEATHER CONDITIONS

Temperature: High 85 Low 50

Precipitation: Inches – Rain – Snow –

Condition: Clear Yes Partly Cloudy – Overcast –

SAFETY

Accidents: Personal ______ Equipment ______ Public Liability ______ Property Damage ______

Explain: ______

MATERIALS

Cost Code Ticket No.

SUBCONTRACTORS

Company No. Men

1. WCM - 8 Denver Reel - 2
2. O'DONNEL - 1 - 4 MAN
3. 2 - oper/hoe
4. 2 - LAB
5. D & D - 4
6.
7. MURPHY - 1 - oper/blade
8. 1 - LOADER / OPER 1/2 DAY

FORM BUILDERS - 4

EQUIPMENT RENTAL	DATE IN	DATE OUT	SUPPLIER	REMARKS

1) Started 12" water @ 92nd & Sheridan at 8:30. Half done. Just need [illegible], we will [illegible] Wednesday. Found abandoned phone cable & unmarked electric utilities.

2) Murphy didn't show up with blade & loader on northwestern street work. Worked 8 HRS. Murphy showed up with blade @ 10:00. Loader @ 10:30 loader broke down @ 12:30. No loader the rest of the day.

3) O'Donnel adjusting manholes in road.

4) Schedule grade beam pours on one half of building for Thursday @ 12:00

5) Ralph Kerr, inspector showed up to [illegible] walls @ 1 & 2 behind bank vault. No answer yet as to [illegible]. Talking about pilasters.

6) Backfilled grade beams & tie beams.

7)

WHITE - Project Manager CANARY - Superintendent

WCM-018

WaltersCM A Bill L Walters Company

7951 East Maplewood Avenue, Suite 200, Englewood, Colorado 80111, (303) 770-4300

9K2

DAILY LOG

PROJECT WESTMINSTER BANK DATE 9/10/84

WEATHER CONDITIONS SIGNATURE

Temperature: High 85 Low 60

Precipitation: Inches — Rain — Snow —

Condition: Clear (C) Partly Cloudy — Overcast —

SAFETY

Accidents: Personal — Equipment — Public Liability — Property Damage —

Explain:

MATERIALS

Cost Code Ticket No.

SUBCONTRACTORS

Company No. Men

1. WCM-8 RIVIERA - 1
2. O'DONNEL - 1-FMAN
3. 1-LAB
4. 2-Hoe/oper
5. STRESSCON - 4
6. MURPHY - 1 - Loader/oper
7.
8. FORM BUILDERS - 4

EQUIPMENT RENTAL	DATE IN	DATE OUT	SUPPLIER	REMARKS

1) CORING COMPANY SHOWED UP @ 8:30. JOHN CARLSON ALSO. FINISH DRILLING HOLES @ TIE BEAMS FOR STRESSCON.
2) STRESSCON STARTED. TRUCK & CRANE READY @ 8:00
3) MURPHY- 2 TRUCKS TO HAUL EXCESS DIRT, LOADER.
4) SHIFTED TRAFFIC ON PERMANENT ROAD.
5) TALKED TO [illegible] ([illegible]). SCHEDULE FOR 9/17. NEED SHOP DWGS APPROVED.
6) SCHEDULED FOR BANK VAULT FLOOR POUR ON TUESDAY.
7) POSSIBLE LOW CONCRETE BREAKS @ TIE BEAM FOR ELEVATOR & STAIR #1. POSSIBLY BREAK & TEAR OUT. WILL KNOW ON TUESDAY.
8) STRESSCON SET 8 PIECES.
9) REBAR FOR STRUCTURAL PLAZA SHOWED UP. WCM UNLOADED.
10) POURED WALLS FOR TYPE R 10' INLET ON SHERIDAN.
11) TALKED TO MURPHY ABOUT SMALL BACKHOE LOADER FOR JOB, SAID ONE WASN'T AVAILABLE.
12) MEL HELPED O'DONNEL FINISH MANHOLES.
13) [illegible] STARTED @ 3:00 DOING VAULT STEEL.

WHITE - Project Manager CANARY - Superintendent

WCM-015

WaltersCM A Bill L Walters Company

JG

7951 East Maplewood Avenue, Suite 300, Englewood, Colorado 80111, (303) 779-4300

DAILY LOG

PROJECT WESTMINSTER BANK DATE 9-14-84
WEATHER CONDITIONS SIGNATURE
Temperature: High [illegible] Low [illegible]
Precipitation: Inches — Rain — Snow —
Condition: Clear — Partly Cloudy Yes Overcast Yes

SAFETY
Accidents: Personal — Equipment — Public Liability — Property Damage —
Explain:

MATERIALS

Cost Code	Ticket No.

SUBCONTRACTORS

Company No. Men
1. WCM-8
2. Denver Rebar -3 - 2 HRS
3. MURPHY - 1 -LOADER/oper
4. 2 - TANDEMS
5.
6. RIVIERA-1
7. STRESSCON - 4
8. FORM BUILDERS - 3

EQUIPMENT RENTAL	DATE IN	DATE OUT	SUPPLIER	REMARKS

1) DENVER REBAR STARTED TYING VAULT WALL STEEL. POUR VAULT ON 9/18.
2) FORM & POUR TOPPING SLAB @ CORNERS ON 1ST FLOOR TO BE ABLE TO START BRICK WORK.
3) 8427948 Case Number (westminster police). POLICE STOPPED BY AND SAID ARRESTED 2 PEOPLE ON PICKING UP WCM CONES AND BARRICADES.
4) ZIG ZAG DID 4 - 4"X10" CORES @ TIE BEAMS. 9:30-12:00 WASSENAAR WILL PICK THEM UP. WASSENAAR PICKED UP CYLINDERS @12:30.
5) MEI GROUTING DOWELS & HOLES IN TIE BEAM FOR STRESSCON.
6) NORTHWESTERN DOING BACKFILL FOR O'DONNEL ON STORM EAST SIDE.
7) CALLED NORTHSTAR, O'DONNEL, RIVIERA, HELM, HEAT & POWER, ON SCHEDULE FOR BLDG TOPPING SLABS START 10/1, ROOF ON BLDG 10-15.
8) Talked to [illegible] [illegible] on setting [illegible] in parking lot. Scheduled for 9-17.
9) SCHEDULED TO POUR LIGHT POLE BASES ON 9-21.
10) RIVIERA SET TEMPORARY POWER TO BLDG. 220 3 PHASE.
11) WEATHER COLD LIKE WINTER.
12) POURED 2 - 4'X4'X3 PILASTERS @ STRUCTURAL PLAZA.

WHITE - Project Manager CANARY - Superintendent

WCM-015

WaltersCM A Bill L Walters Company

7881 East Maplewood Avenue, Suite 300, Englewood, Colorado 80111 (303) 770-4300

HL2

DAILY LOG

PROJECT WESTMINSTER BANK DATE SEPTEMBER 20, 1984

WEATHER CONDITIONS SIGNATURE Roger O'Neil

Temperature: High ____ Low ____
Precipitation: Inches ____ Rain ____ Snow ____
Condition: Clear ____ Partly Cloudy ____ Overcast ____

SAFETY

Accidents: Personal — Equipment — Public Liability — Property Damage —
Explain: ____

MATERIALS

Cost Code	Ticket No

SUBCONTRACTORS

Company	No Men
1 WCM - 8	MURPHY - 1 - HOE/OPER 1 - LOADER/OPER 1 - DOZER/OPER
2 D&D - 5	
3 BRICK - 2	
4 STRESSCON - 4	
5 HEAT/POWER - 2	
6	
7.	
8	

EQUIPMENT RENTAL	DATE IN	DATE OUT	SUPPLIER	REMARKS

1) D&D DOING CURB & GUTTER & CROSSPANS FROM STATION 6+00 TO 9+00. AHW HAS A BUST PROBLEM IN THE CURB & GUTTER. HAD A .8 BUST TO BE CUT OUT. D&D STARTED @ 8:00 WORKING BACK TO 6+00.

2) POURED DRILLED 7 LIGHT POLE BASES. DRILLED FROM 9:00 TO 10:30. CONCRETE CAME @ 11:00. 5 CY. ELECTRICIANS SET CONDUIT & BOLT PATTERNS AND AHW SURVEY (GREG) SITUATED BOLTS SO LIGHTS FACE THE RIGHT WAY.

3) MURPHY STILL BEHIND ON MOVING DIRT. BLADE SCHEDULED TO COME IN ON 9-24 MONDAY. BACKFILLED STRUCTURAL PLAZA.

4) BRICK MASONRY SETTING UP SCAFFOLD ON 10 LINE. HAVING PROBLEM WITH THEIR DELIVERY ON THEIR MORTAR COLOR. 1 DAY BEHIND

5) STRESSCON WAS SUPPOSE TO BE TO 2 LINE ON NORTH SIDE TODAY. WON'T BE UNTIL TOMORROW. THEY ARE 1 DAY BEHIND. 2 DAYS.

6) DENVER REEL IS TIEING UP VAULT ROOF STEEL. THEN THEY WILL MOVE OVER TO STRUCTURAL PLAZA.

7) THREED TO HEAT (ALL MARCO) ON SCHEDULE. MECH. CURBS IN 10-1. WILL BE MEETING WITH THEM ON 9-24.

8) MET WITH AHW SURVEYING ON #898 BACKCHARGE. EVERYTHING WORKED OUT ON HANDLING BACKCHARGES. NO BACKCHARGE.

WHITE - Project Manager CANARY - Superintendent
WCM-018

WaltersCM A Bill L Walters Company
7961 East Maplewood Avenue, Suite 200, Englewood, Colorado 80111 (303) 770-4300

DAILY LOG

PROJECT WESTMINSTER BANK DATE 10-3-84

WEATHER CONDITIONS SIGNATURE Roger L. O'Neal

Temperature High 75 Low 38

Precipitation Inches — Rain — Snow — —

Condition Clear — Partly Cloudy YES Overcast —

SAFETY

Accidents: Personal — Equipment — Public Liability — Property Damage —

Explain:

MATERIALS

Cost Code Ticket No.

SUBCONTRACTORS

Company No Men

1 BENCH - 9
2
3 WCM - 11
4 O'DONNEL - 3
5 HEAT/POWER - 1
6
7 STRESSCON - 4
8

MURPHY - 1 - LOADER/OPER
1 - BLADE/OPER

D & D - 3
HELM - 3

EQUIPMENT RENTAL	DATE IN	DATE OUT	SUPPLIER	REMARKS

1) PUT IN SCUPPER FOR ROOF ON 10 LINE. 2 BRICKS HIGH & 2 BRICKS LONG, 9" OFF OF TWIN TEE IN CENTER OF WALL.
2) KEVIN, BARRY, MIKE WORKING IN PARKING LOT.
3) REST OF CREW GETTING 1ST FLOOR READY FOR A POUR.
4) 2 PEOPLE FROM CHASE MANHATTAN BANK VISITED THE JOB SITE. SHOWED THEM AROUND. COMMENTED HOW CLEAN JOB LOOKED.
5) D & D SHOULD HAVE CURB & GUTTER IN PHASE 1 PARKING DONE.
6) HEAT/POWER HAS ~~4~~ 4 GUYS SCHEDULED FOR THURSDAY.
7) TALKED TO ART WOOD OF SUBURBAN ON CONCRETE DESIGN FOR FLOOR TOPPING. WE ARE GOING TO A 5½ SACK MIX WITH A POZZOLITH ACCELERATOR.
8) JOHN WAS OUT THIS MORNING SAYING CHANGES TO BE MADE. NO LONGER WITH WALTERS. DAVE METCALF PROJECT MANAGER.
9) TALKED TO BRANNON ON PAVING. START TODAY & WORK SATURDAY ALSO.
10) MAY HAVE TO WORK LABORS LATE TO GET READY FOR 1ST FLOOR POUR. NO OVERTIME.
11) 3:30 STARTED TO RAIN. CHECK. MAY HAVE TO CANCEL PAVING @ PARKING LOT & 1ST FLOOR POUR.

WCM-015 WHITE - Project Manager CANARY - Superintendent

[illegible] Company

7851 East Maplewood Avenue, Suite 200, Englewood, Colorado 80111, (303) 770-4300

DAILY LOG

PROJECT WESTMINSTER BANK DATE OCTOBER 8, 1984

WEATHER CONDITIONS SIGNATURE Roger O'Neal

Temperature: High 65 Low 35

Precipitation: Inches — Rain — Snow —

Condition: Clear — Partly Cloudy YES Overcast —

SAFETY

Accidents: Personal — Equipment — Public Liability — Property Damage —

Explain:

MATERIALS

Cost Code	Ticket No.

SUBCONTRACTORS

Company — No Men

1. WCM-11
2. O'DONNEL-2
3. RIVIERA-2
5. D&D-22
7. BENCH-10
8. STRESSCON-4

MURPHY-0

HEAT/POWER-2

ANDERSON-2

EQUIPMENT RENTAL	DATE IN	DATE OUT	SUPPLIER	REMARKS

1) SET UP FOR 1ST FLOOR POUR. PUMPER HERE @ 6:00. READY TO POUR. SUBURBAN HAD PROBLEMS WITH THE BATCH PLANT. CONCRETE DIDN'T SHOW UP UNTIL 8:15. SLUMP WAS BAD & CONCRETE TEMPERATURE WAS 65° BACKCHARGE SUBURBAN. I TALKED TO MIKE.

2) FINISHED PUMPING @ 11:30. POURED 1ST FLOOR & STAIR TOWER 2 LANDINGS. 132 CY.

3) PUSHED BRANNON BACK UNTIL WEDNESDAY. SUBGRADE STILL TO WET.

4) PUBLIC SERVICE SHOWED UP TO HOOK UP PERMANENT POWER THROUGH PARKING LOT.

5) PRECAST FINISHED UP ON THE BUILDING. THEY SHOULD BE COMPLETLY DONE ON WEDNESDAY.

6) D&D POURED A ALL CURB & GUTTER FOR PHASE I PARKING. 8CY

WHITE - Project Manager CANARY - Superintendent

WCM-015

7951 East Maplewood Avenue, Suite 200, Englewood, Colorado 80111, (303) 770-4300

DAILY LOG

PROJECT Westminster Bank DATE October 23, 1984

WEATHER CONDITIONS SIGNATURE Roger

Temperature: High 40° Low 25°

Precipitation: Inches ______ Rain – Snow –

Condition: Clear – Partly Cloudy Yes Overcast ______

SAFETY

Accidents: Personal – Equipment – Public Liability – Property Damage –

Explain: ______

MATERIALS

Cost Code	Ticket No.

SUBCONTRACTORS

Company	No. Men
1. WCM -4	
2. HELM -1	
3.	
4. RIVIERA-1	
5. O'DONNELL-2	
6. BERKH - 4 HALF/DAY	
7.	
8.	

EQUIPMENT RENTAL	DATE IN	DATE OUT	SUPPLIER	REMARKS

1) Weather wasn't bad. Sun was out all day.
2) CARPENTERS CONTINUE WEATHER ENCLOSURES.
3) BERKH WORKED HALF A DAY MOVING SCAFFOLD. THE GROUND IS TO WET YET.
4) STILL HAVEN'T DONE ANY SITE WORK.
5) KEVIN GROUTED THE ROOF POSTS.

WHITE - Project Manager CANARY - Superintendent

WCM-015

Company

7951 East Maplewood Avenue, Suite 200, Englewood, Colorado 80111, (303) 770-4300

DAILY LOG

PROJECT Westminster Bank DATE October 29, 1984

WEATHER CONDITIONS SIGNATURE Roger L O'Neal

Temperature: High 60° Low 35°

Precipitation: Inches — Rain — Snow —

Condition: Clear (✓) Partly Cloudy — Overcast —

SAFETY

Accidents: Personal — Equipment — Public Liability — Property Damage —

Explain:

MATERIALS	
Cost Code	Ticket No.

SUBCONTRACTORS

Company No. Men

1. WCM - 7
2.
3. O'DANNEL - 3
4. RIVIERA - 2
5. HELM - 4
6.
7. DERICH - 7
8. CBC - 6

D&D - 20
Heat/Power - 1
BRUNDAGE - 1
AHW - 2 Half Day
NORTHSTAR - 2

EQUIPMENT RENTAL	DATE IN	DATE OUT	SUPPLIER	REMARKS

1) O'DANNEL TAPPED ROOF DRAINS INTO STORM ON EAST SIDE OF BLDG.
2) Helm finishing duct supports on the roof
3) Riviera doing rough ins on floors.
4) Northstar up on 3rd floor & 1st floor on rough ins.
5) Derich on west side of the building and on the columns on the south side
6) D&D Poured all of 2ND FLOOR, EAST SECTION OF 3RD FLOOR, South canopy drive, Stair pans / landings, Elevator pit floor. Total Pumping @ 7:00, finished @ 1:30 Poured 178 CY Total for day.
7) Kevin was sick today.
8) AHW started [illegible] & the roof.
9) CBC finished 2/3 of roof
10) Called Maddox on return credit for full #100 lb propane bottles.
11) Talked to Dennis Hester on picking up rental items.

WHITE - Project Manager CANARY - Superintendent

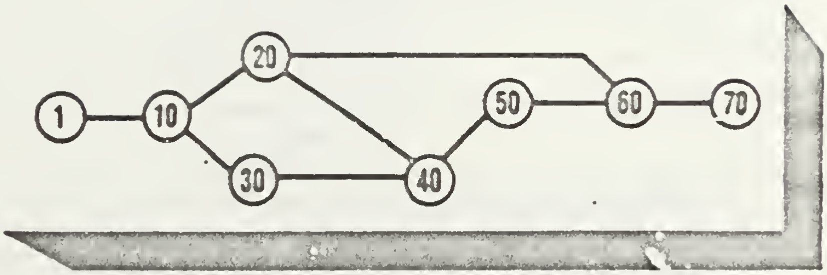
WCM-013

APPENDIX C

PROJECT MANAGEMENT SOFTWARE UTILIZED

PMS-II

THE MOST COMPLETE
PROJECT MANAGEMENT
SYSTEM . . .



NORTH AMERICA MICA, INC.
MICA
11772 Sorrento Valley Rd., Suite 100 • San Diego, CA 92121 • (619) 481-6996/Telex 791237 NAMICA UD

THE PROBLEM:

What do you do when . . .?

The president of your company just assigned you the responsibility of managing the development of a new product that requires:

- Market verification
- Design feasibility
- Reliability certification
- Production facility design
- Pilot production run
- Conceptual design
- Prototype development
- Test marketing
- Facility construction

And you are expected to present a plan from beginning to end at the Board of Directors meeting in two weeks. Your plan must identify what resources will be needed and when, how much the project will cost, and when each of the major accomplishments will be ready for review. You are to use the available resources that are controlled by ten different department managers, and this project is to be scheduled around the current workload of the various departments. And, by the way, your bonus and next year's salary are dependent upon how quickly and inexpensively you can accomplish this assignment.

How are you going to approach this seemingly impossible task?

THE SOLUTION:

You need a systematic method for assembling your project into a dynamic network of interrelated activities. This network should be able to handle the complexities of your project, yet be simple to change. It should be able to present you with the current status of each activity in your project, and it should be able to tell you how each is doing against budget.

This systematic method should enable you to prepare the reports that the president wants, and it should allow you to identify what activities will be affected by a slip or a gain in another activity. Your project needs to be under the control of a Project Management System.

Maximum project control on a micro budget! Check these features

PMS-II is a complete critical path network analyzer that will calculate the early start/finish and late start/finish dates, float time, and critical paths for project networks with up to 2700 activities.

You'll find PMS-II as easy to operate as it is profitable to use. The 100 + page user manual comes complete with a tutorial section to guide the first time user through the operation of the system. In just a few minutes you can have PMS-II solving your project problems.

FEATURES:

- U.S. and International date formats supported.
- Schedule based on a 3, 4, 5, 6, or 7 day work week.
- Scheduling around up to 100 holiday or non-work periods of up to 99 days in length.
- Three project management disciplines: 1) **actual start/finish**, 2) **days remaining**, and 3) **percent complete**. Since PMS-II maintains the data required for all three methods, you can switch from one mode to the other on the same project as conditions dictate.
- Optional **desired finish date** causes PMS-II also to process your project from desired finish to earliest start calculating **"True Float"** for all activities.
- All mandatory and optional **government contract reporting requirements** as defined in the Corps of Engineers *Project Management* specifications ER-1-1-11 and DOD 7000-2, a real plus for those engaged in **government contract work!**
- Designed by experts in the field of **user oriented** software, PMS-II is extremely easy to operate. It is a **'menu-driven'** system with extensive editing and error checking features. PMS-II's calculation program even **checks your network** for logic errors and identifies broken activity chains.
- Speed — performing all calculations on a project network of 1000 activities in under 10 minutes. This **rapid turn-around time** affords you the luxury of playing out various "what if" scenarios until all dates and durations are fully optimized.
- Easily **interfaced to your job cost system** or **dBASE II** (tm) and other programming languages.

SUPPORT:

North America Mica provides each user with **one year** of free software and manual updates (PMS-II is now in its eighth enhanced release) as well as free phone-in consulting service on any PMS-II related question.

CAPACITY:

PMS-II determines the maximum number of activities per network by looking at the amount of free memory available. With 64K under the CP/M operating system, PMS-II will handle over 1250 activities. Under MP/M in a 48K user partition, PMS-II will allow about 700 activities, and under CP/M-86 or PC/MS DOS up to 2700 activities can be processed in 128K, with a hard disk or XT system.

PMS-II will manage 'n' number of projects or **sub-projects** depending on disk capacity. Sub-projects can be automatically linked to provide for an **unlimited project size**.

HARDWARE REQUIREMENTS:

- Any microcomputer system with at least 64K of memory, and
- 80 character by 24 line video display with addressable cursor, and erase to end-of-line, and
- A 132 column printer; character or dot-matrix (10 CPI on 14" paper, 16.7 CPI with 8" paper), and
- 600K of disk storage in 2 drives or a hard disk.

SOFTWARE REQUIREMENTS:

- CP/M (tm) (Ver. 2.2 or later), MP/M (tm), CP/M-86 (tm), MSDOS (tm), or PCDOS (tm) operating systems.

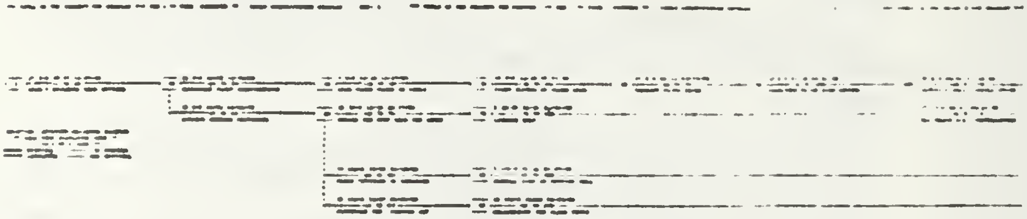
dBASE II IS A TRADEMARK OF ASHTON-TATE. CP/M & MP/M
ARE TRADEMARKS OF DIGITAL RESEARCH

Turn Projects Into Profits

With The Most Complete Set of Project

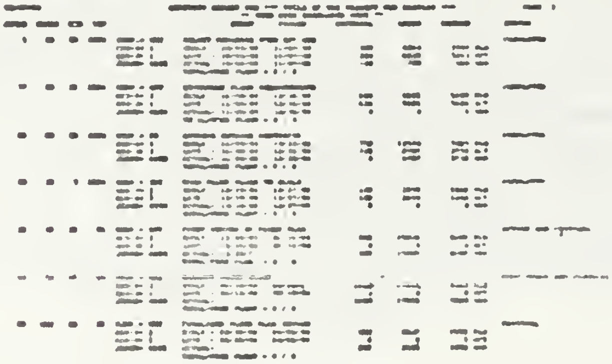
ACTIVITY-ON-ARC DIAGRAM —

- A graphic presentation of the logic of the activity network.
- Displays node numbers, description, and duration of each activity.
- Optionally prints the early start/finish or late start/finish dates.
- Highlights the Critical Path(s), In-Process, and completed activities.



ACTIVITY REPORT — keystone of the system's reporting capabilities:

- Allows you to select primary, secondary, and/or tertiary sort from early start, early finish, late start, late finish, responsibility, user1, user2, float, job cost fields, or end node.
- You can select a range of values or a single value on any or all of the data fields to extract any subset of activities from your project.
- The report provides page breaks and cost subtotal on the major sort field at your option.
- You can optionally suppress the printing of the budgeted and actual dollar amounts.
- The activity status as of the report date (Can Start, Must Start, Late, Critical, Active, Complete, or Planned) is displayed for each activity.
- All of your planning parameters (i.e., burden rate, workdays per week, etc.), holidays, and scheduled choices are recapped at the end of the report.
- A "Schedule Only" Report can be displayed on the screen.



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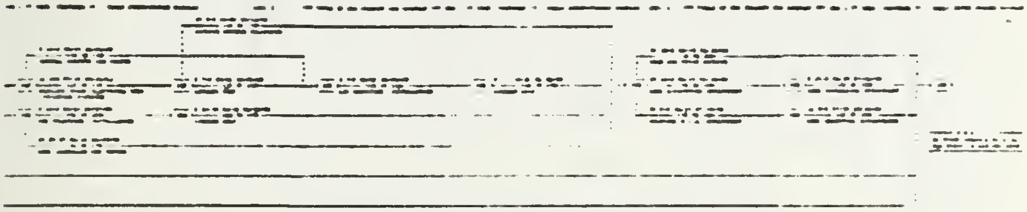
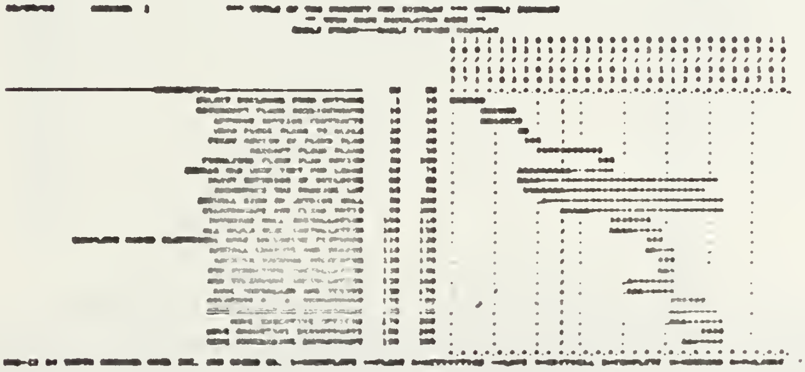
Management Reports Ever Offered



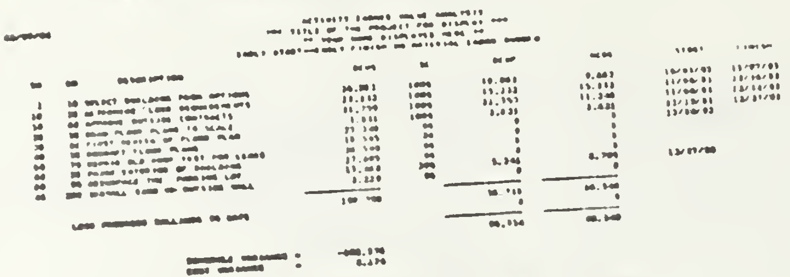
GANTT OR BAR CHART —

- Shows in graphic form the start and stop date, float time, and percent complete status for each activity.
- Shows the critical path(s).
- Gives you the same data sorting and selection options as the Activity Report.
- Allows you to define the symbols you want for Critical Path, Activity Time, *Float* Time, Late, and Percent Complete.
- Prints a vertical outline line under the report date which shows you what should be complete and what is still ahead.
- The holidays, non-work periods, and weekends are highlighted.
- You can select either a daily or weekly print format (weekly shown).

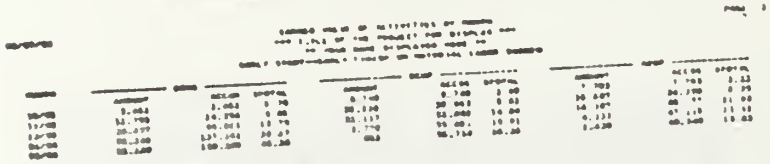


Earned Value Analysis

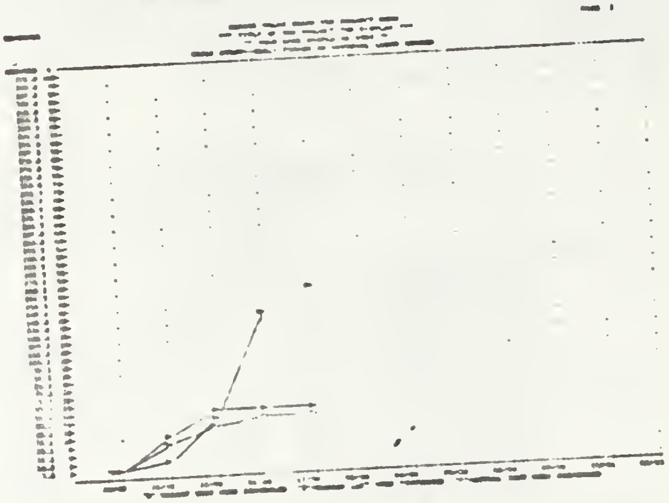
- For defense contractors working to DOD reg 7000.2
- Shows value of work budget vs. accomplished vs. actual cost for each activity
- Calculates earned value based upon percent complete or days remaining
- An outstanding management tool that is applicable to any project control situation.
- Report generated in three sections:



1. Value of work accomplished by activity as a function of budgeted amounts, percent complete, and actual.



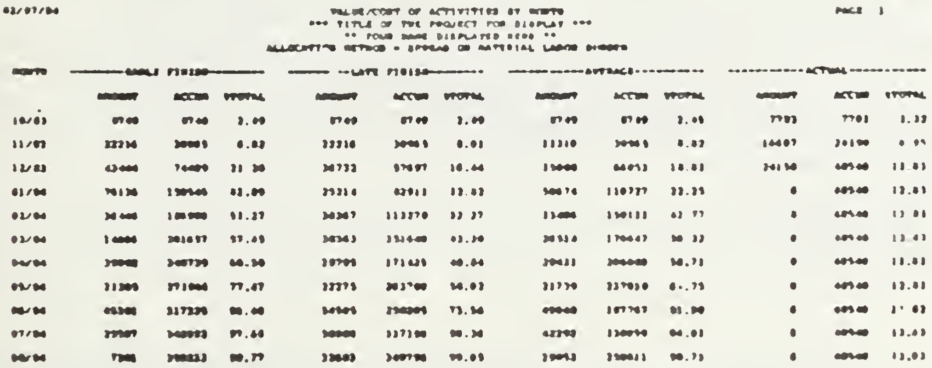
2. Budgeted, earned, and actual amount by month for all activities.



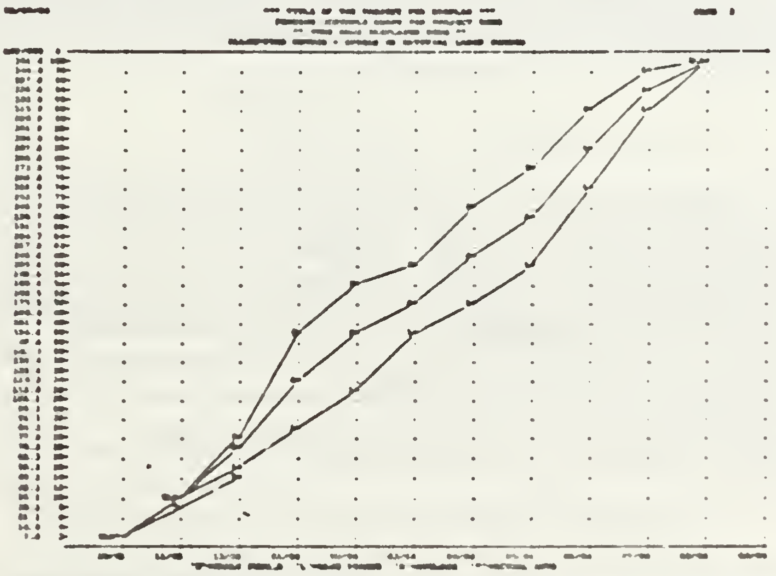
3. A graphic presentation of the earned value, the budget, and the actual amounts.

Funding Schedule

- Shows in tabular and graphic form the total costs by month in 4 ways: 1) early finish basis, 2) late finish basis, 3) average of 1 and 2 (per Corps of Engineers specification ER 1-1-11 reporting requirements), and 4) actual cost at actual start/finish.
- For activities that span more than one month, PMS-II can put all the activity's dollars in the ending month or spread them over the duration of the activity.



VALUE/COST OF ACTIVITIES BY MONTH
*** TITLE OF THE PROJECT FOR DISPLAY ***
** YOUR NAME DISPLAYED HERE **



Now, Do You Have the Resources to Accomplish the Schedule?

7

RMS II
A Resource Management System For Use With PMS-II

THE PROBLEM:

Your company has successfully used PMS-II to schedule and control many concurrent projects but your project managers are experiencing unexpected delays and confusion because more than one of them has planned to utilize the same resource at the same time.

Often, critical activities within your project are discussed in detail with the department managers that will be providing the resource(s) required. They may assure you that your project will be "taken care of" only to find out when it is too late that they don't have enough resources to meet the schedule because the resource plans that were submitted for budget approval were in error! They're very sorry, but your project will now be delayed. All remaining activities will need to be renegotiated with all of the other departments and you can expect more of the unexpected.

THE SOLUTION:

Your company needs to use a systematic method for controlling the allocation of finite resources against the requirements of many competing projects. Your company needs RMS-II, the Resource Management System for PMS-II

Put An End To Resource Conflicts . . .

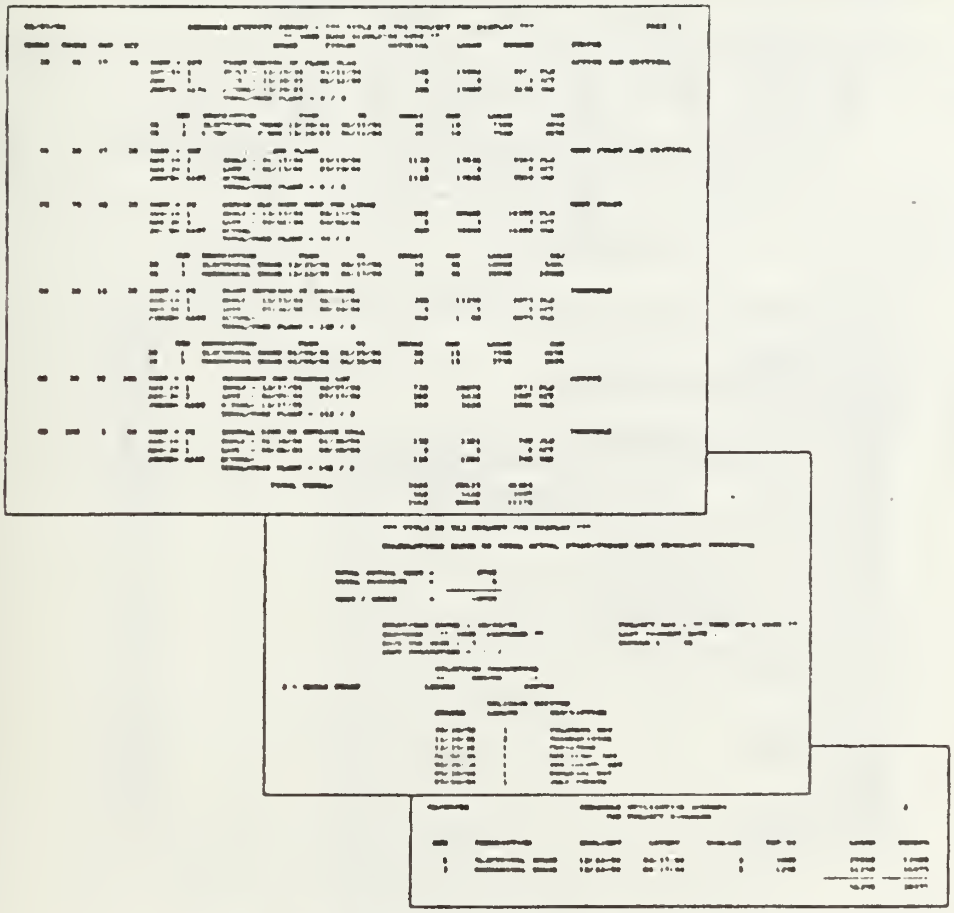
RMS-II is a completely integrated resource management system that allows a project manager to define up to 96 separate resource centers — people, departments, machine tools, test centers, etc. — each with a unique capacity in hours, an hourly cost, and a burden rate. These resources can then be allocated to the activities in your PMS-II projects. Reports can be generated showing these allocations on either a project or a resource center basis.

RMS-II is ideal for contractors who have their own crews, for engineering or manufacturing firms using a matrix type of organization, or in any project situation where conflicts over scarce resources can arise. It makes capacity planning and load leveling easy by providing the resource managers with quick visibility of the demands on the resource centers under their control. RMS-II provides:

- Optional selection of either the resource center's burden rate or the burden rate associated with the project (fixed burden contracts).
- Visible display of all allocations against a resource center that potentially conflict with the activity that is being allocated.
- Allocations automatically update the activity's budget for labor and burden.
- Allocations are made in hours per day and can be budgeted in either total hours or total dollars.

And Unproductive [illegible] Resource Capacity

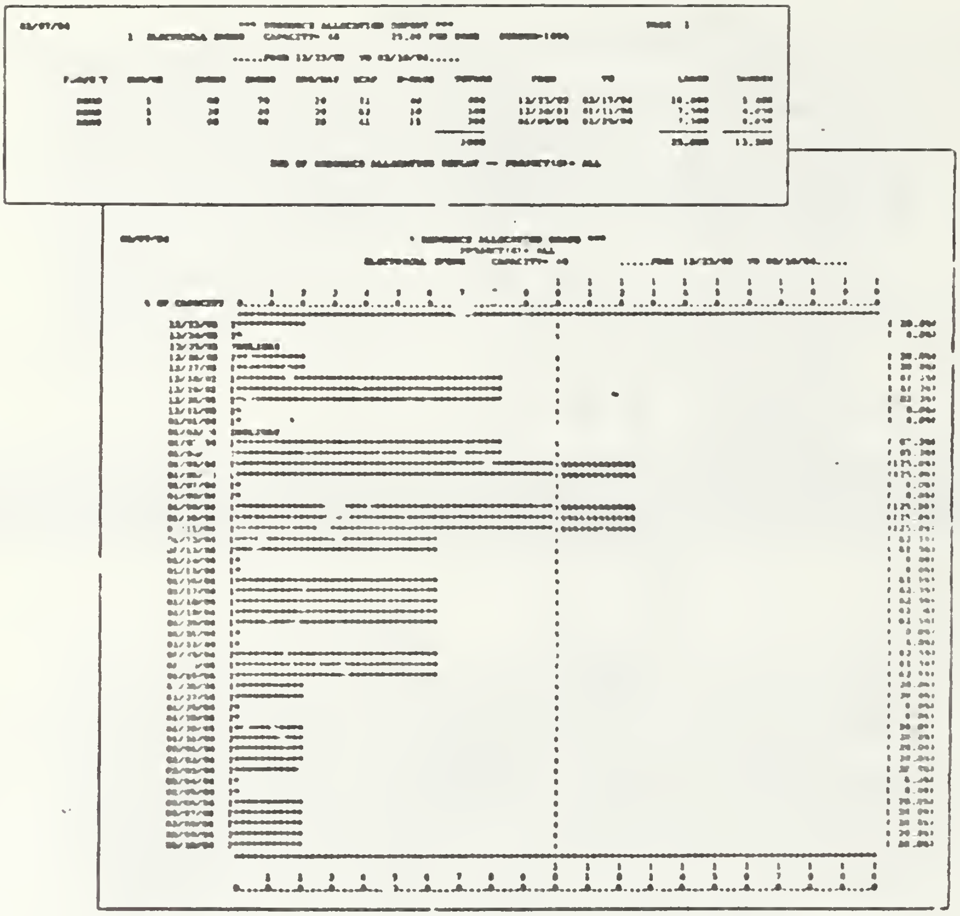
Allocation Report For A Project



ALLOCATION REPORT —

- Shows all allocations to a given activity within a project from any resource center.
- Indicates whether each allocation to an activity is within that activity's current scheduled time period.
- Offers all the Sort and Select features from PMS II Activity Report.

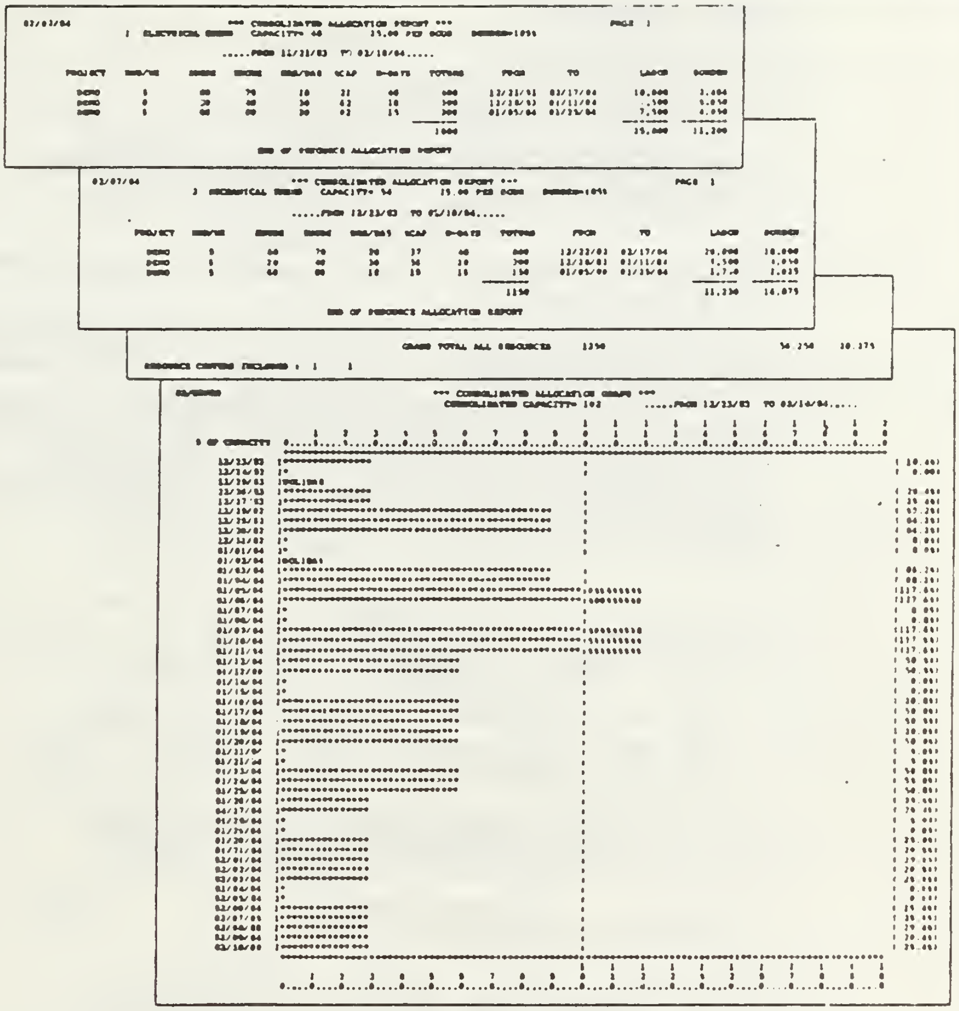
Resource Allocation Report/Graph



- Shows sum of all allocations of a given resource center as a percent of capacity over time.
- Graph shows allocations by date and highlights allocations in excess of 100% of capacity.
- Date selectable and single project selectable for partial print.

Reproduced from best available copy.

Consolidated Allocation Report/Graph



- Provides allocation to capacity data over time for any combination of 2 to 96 resource centers.
- Allows resource manager to define individuals as resource centers and still extract summary allocation data for the entire group or department.

And you can manage your project's material commitments as well. . .

MMS-II

THE PROBLEM:

MEMO

To: **PROJECT MANAGER** re: **GM TOWER**

— Will the materials arrive in time for each activity?
— Can money be saved by bulk purchases across projects?
— The project schedule has changed — what orders need attention?
— What are the details of the large material expenditures for the main steel structure?
— Will material orders allow concrete pouring to be moved back two weeks?
— The vendor is asking for payment — did we receive line 12 of P.O. 142-3434A?
— What materials have been allocated for the major electrical work?
— I'd like to see details of how you are minimizing construction loan cash draw.

Call me tomorrow morning.
From: **A.J.T., Vice President**

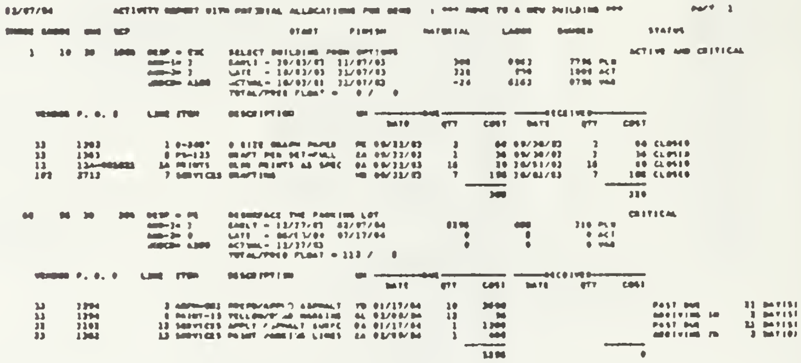
P.S.: "Genius is not 'knowing' the answer to every question, it is knowing 'where to find' the answer." (Albert Einstein)

THE SOLUTION:

MMS-II is a **materials** management system that gives a project manager **control of all major bid items.** As many as **1000 purchase orders** can be entered into MMS-II's purchase order data base for as many as **500 different vendors.** Up to **32,000 line items** of material can be allocated to 'n' activities in 'n' PMS-II projects.

MMS-II works hand-in-hand with PMS-II. Entries to MMS-II **automatically update material budget and actual values** in PMS-II and are shown on the ACTIVITY REPORT, FUNDING SCHEDULE, and EARNED VALUE ANALYSIS. Schedule changes in PMS-II are matched with scheduled delivery dates of material orders, and late or excessively early scheduled deliveries are highlighted.

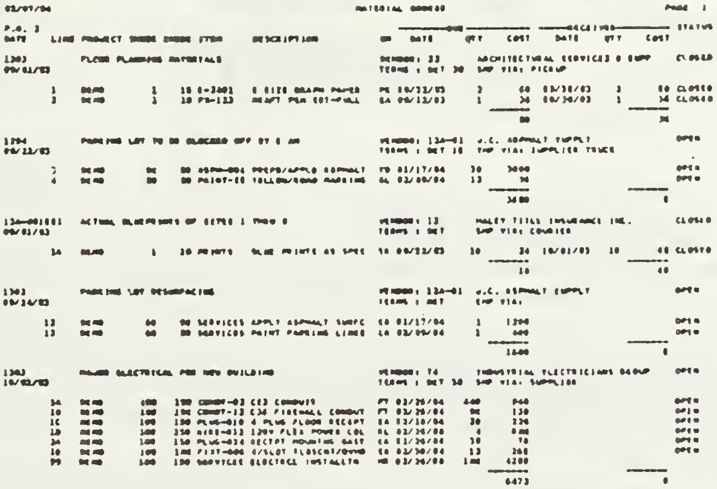
MMS-II has the same easy-to-use techniques for entering and updating information as PMS-II. Only necessary information is requested, and clear editing and error checking messages help you get your data entered correctly the first time.



ACTIVITY REPORT WITH MATERIAL ALLOCATIONS —

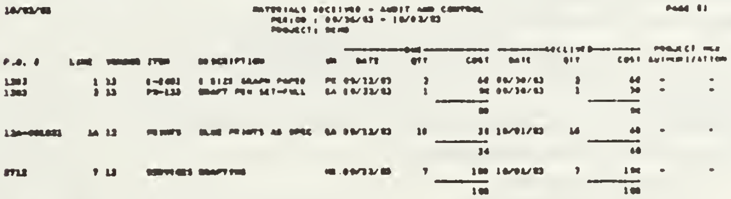
- Provides the **details of all material allocations** for each activity, showing delivery schedule and status.
- Highlights situations where materials are due to arrive outside of currently scheduled activity time periods.
- **Keeps track of thousands of line items of material orders as the project moves from activity to activity, making timely delivery of critical materials practical even with frequent schedule changes.**
- **Highlights areas where delaying or expediting deliveries could improve project profitability and progress.**
- **Includes the same sort and select capabilities as PMS-II and RMS-II.**

A Materials Management System for use with PMS-II



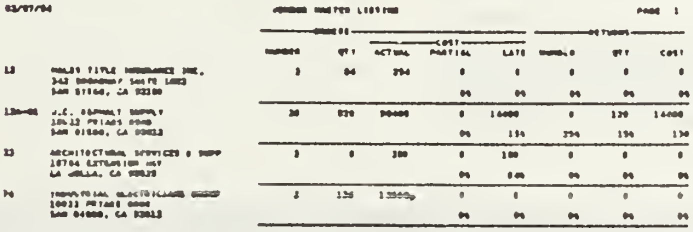
MATERIAL ORDERS DETAIL REPORT —

- Shows the detail of each purchase order in the data base, including quantities received against orders.
- P.O.s can be selectively reported based on a range of P.O. numbers, status of purchase order, order date, and vendor.



MATERIALS RECEIVED — AUDIT AND CONTROL —

- Provides for a continuous audit trail of the quantities and costs of materials received as well as a convenient means of controlling the authorization of material expenditures.



VENDOR REFERENCE AND ANALYSIS LISTING —

- Acts as a control list of acceptable vendors and as an aid to tracking each vendor's performance.

And when you get tired of running PMS-II yourself

BPS-II

THE PROBLEM:

When you first get your FMS-II, and are running three or four projects, sitting at the computer and generating each of the reports you needed is not much of a chore — in fact, it is actually a lot of fun. But after you have several projects on your system, and the novelty of watching the programs go through their paces has worn off, tending the machine while it generates the many weekly reports you require can become an expensive and tiresome task.

THE SOLUTION:

BPS-II is a batch processing system, which allows you to:

1) define the projects you are currently maneging,
2) calculate and generate activity reports, GANTT charts, and edit listings, and
3) select options for these calculations and reports.

Then, with a single command from you, **BPS-II** will calculate and report against any number of projects with as many different options as your current PMS-II system, all from your pre-defined files, completely unattended by you.

If you will find yourself running the same reports against the same projects day after day or week after week, **BPS-II** can result in a considerable savings in time, money, boredom, and aggravation.

BPS-II has been designed to provide you with the greatest flexibility possible by allowing you to set up multiple independent files for:

1) projects to be processed,
2) reports to be generated, and
3) the sort, select, and format options to be used with the reports.

Then, any set of projects can be run against any set of reports using any set of options!

. . . let BPS-II do it for you

Maximum Project Control on a Micro Budget

Pricing:	Full System	Demo	Upgraded Demo
1) PMS-II	$1295.00	$50.00	$1245.00
2) RMS-II	$ 995.00	$50.00	$ 945.00
3) MMS-II	$ 995.00	$50.00	$ 945.00
4) BPS-II	$ 495.00		

(California residents please add 6% Sales Tax.)

Discount Policy:
30% educational discount for recognized institutions. Demo system price applied toward full system price.

Payment Terms:
Prepay or C.O.D. Next day air available via UPS Red Label (add $20.00 per PMS-II system).

Delivery:
All systems shipped within 24 hours ARO, UPS Blue Label (second day air).

Freight:
N/C in U.S.A.

About the Demo Systems

The demo systems come with full user documentation including tutorial and ALL the features of the full system except those which allow you to create or add to a project network. With the DEMO network that is included on your disk, you can explore every feature of PMS-II, RMS-II, or MMS-II, on your own machine, at your leisure. When you decide to purchase a full system, just return your demo disk(s) for an upgrade(s), and you will receive $50 credit for each upgraded demo.

ORDER FORM

☐ **Please send one PMS-II demonstration system and user manual ($50.00 — applicable towards the price of the full system)**
☐ **Please send one RMS-II demonstration system and user manual ($50.00 — applicable towards the price of the full system) (requires PMS-II)**
☐ **Please send one MMS-II demonstration system and user manual ($50.00 — applicable towards the price of the full system) (requires PMS-II)**
☐ **Please send full PMS-II system ($1295.00)**
☐ **Please send full RMS-II system ($995.00) (requires PMS-II)**
☐ **Please send full MMS-II system ($995.00) (requires PMS-II)**
☐ **Please send full BPS-II system ($495.00) (requires PMS-II)**

Ordered by (print): ____________________
Title: ____________________ Date ____________
Company: ____________________
Address: ____________________
____
Phone: (   ) ____________________ Ext. (   )
Disk Format: ☐ CP/M ☐ CP/M 86 ☐ PCDOS ☐ MSDOS
Disk Size: ☐ 8" ☐ 5¼"
Computer: ____________ Make ____________ Model

SHIPPING INSTRUCTIONS/DEALER STAMP

DEMAND
CONSTRUCTION SERVICES, INC.
7430 E. Caley Ave Building 1, Suite 350
ENGLEWOOD, COLORADO 80111
(303) 740-8647

NORTH AMERICA MICA INC
11772 Sorrento Valley Rd., Suite 100
San Diego, California 9212[illegible]
(619) 481-6998
Telex 8701257 NAMIC [illegible]

Keeping you on
The Critical Path . . .

NORTH AMERICA MICA, INC

MICA

11772 Sorrento Valley Rd., Suite 100 • San Diego, CA 92121 • (619) 481-6998/Telex #701257 NAMICA UD

APPENDIX D

SUBCONTRACT BACKCHARGE

WaltersCM A Bill L Walters Company
[illegible]

SUBCONTRACT BACKCHARGE

SUBCONTRACTOR:
Company

Date 11-1-84 Project Hyland Office Park
Subcontract # 3710-2505
Backcharge Cost Code 3710-2510
Notification Date 8-15-84

Under the terms of the subcontract agreement, referenced above, Walter CM has exercised its right and completed the following work:

Construction of three (3) 10-ft. Type R inlets and two (2) 5-ft. Type R inlets in the Private Road, excluding manhole rings, ladder rungs and grates supplied by Subcontractor, by mutual agreement. Per WCM letter dated 8-15-84, maximum backcharge total of 5 x $2,016.00 = $10,080.00 is applicable, as actual costs exceeded that maximum. (WCM Cost Distribution summaries, material/equipment invoices, and Payroll Distribution sheets are attached hereto.)

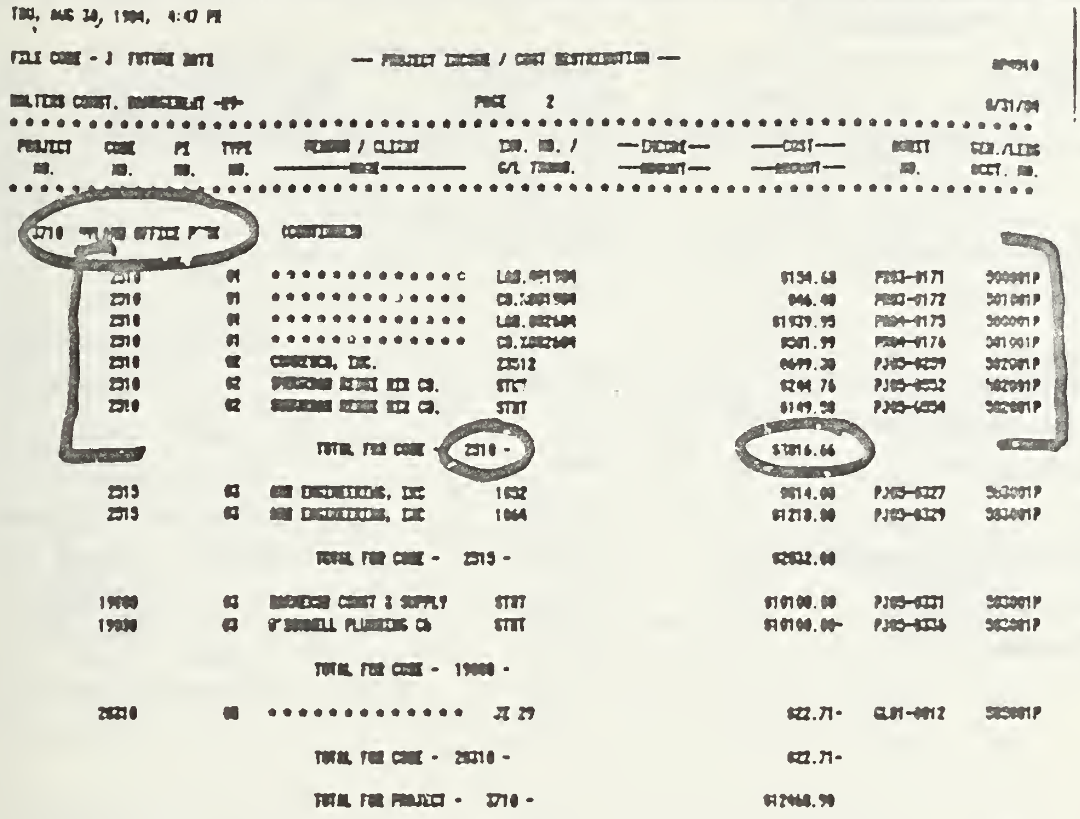
Per Paragraphs 19, 21, & 24 of the agreement, your next subcontract payment will be credited the following amount for reimbursement of our costs.

Vendor	Invoice No./WCM Labor	Cost
WCM labor (see attached)	8/19, 8/26, 9/2, 9/9, 9/16	$10,446.69
Misc. vendors (see attached)	Materials & equipment	2,722.59
ACTUAL COSTS SUBTOTAL		$13,169.28
Minimum Allowed minus Actual Costs =	$10,080.00 - $13,169.28	(3,089.28)
	Subtotal	$10,080.00
	Overhead (0 %)	-0-
	TOTAL	$10,030.00

Bill L. Walters Construction Management, Inc.
By
David M. Metcalf/Project Manager

White - Subcontractor • Yellow - Project Manager • Pink - Accounting

[illegible]



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THU, AUG 30, 1984, 4:47 PM

FILE CODE - 3 FUTURE DATE            --- PROJECT INCOME / COST DISTRIBUTION ---                                  RP0010

WALTERS CONST. MANAGEMENT -89-                      PAGE    2                                                   8/31/84
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
PROJECT   CODE    PI   TYPE      VENDOR / CLIENT        INV. NO. /    ---INCOME---    ----COST----     AUDIT    GEN./LEDG
  NO.      NO.    NO.   NO.   ---------NAME----------   G/L TRANS.    ---AMOUNT---    ---AMOUNT---      NO.     ACCT. NO.
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *

3710 INLAND OFFICE PARK      (CONTINUED)

          2310           01   * * * * * * * * * * * * c   LAB.091784                        $134.68   PR83-0171   300001P
          2310           01   * * * * * * * * * * * * *   CO.X081584                         $46.00   PR83-0172   301001P
          2310           01   * * * * * * * * * * * * *   LAB.082484                       $1939.95   PR84-0173   300001P
          2310           01   * * * * * * * * * * * * *   CO.X082484                        $601.99   PR84-0176   301001P
          2310           02   CONCRETCO, INC.              23512                            $699.30   PJ85-0259   302001P
          2310           02   ANDERSON READY MIX CO.       STMT                             $244.76   PJ85-0252   302001P
          2310           02   ANDERSON READY MIX CO.       STMT                             $149.38   PJ85-0254   302001P

                                  TOTAL FOR CODE -  2310 -                                 $3816.66

          2313           03   ??? ENGINEERING, INC         1032                             $814.00   PJ85-0327   303001P
          2313           03   ??? ENGINEERING, INC         1064                            $1218.00   PJ85-0329   303001P

                                  TOTAL FOR CODE -  2313 -                                 $2032.00

         19000           03   ANDERSON CONST & SUPPLY      STMT                           $10100.00   PJ85-0331   303001P
         19000           03   O'DONNELL PLUMBING CO        STMT                           $10100.00-  PJ85-0336   303001P

                                  TOTAL FOR CODE -  19000 -

         28310           08   * * * * * * * * * * * * *    JE 29                            $22.71-   GL01-0012   303001P

                                  TOTAL FOR CODE -  28310 -                                 $22.71-

                                  TOTAL FOR PROJECT -  3710 -                             $12468.98
```

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PROJECT [illegible]                           PAYROLL DISTRIBUTION                                  [illegible]
BUILDERS CONST. [illegible]                   PAGE    34                                            8/19/84

COST CODE                               ---H O U R S---   ---C O M P E N S A T I O N---   ---B U R D E N---
EMP NO.  EMPLOYEE NAME    CRAFT DESC.   REGULAR           REGULAR   TAXABLE               COMPANY   CRAFT     TOTAL LABOR
                                        OVERTIME  *TOTAL* OVERTIME  NON-TAXABLE  *TOTAL*  PROJECT   *TOTAL*   AND BURDEN

  1050
23952 COLONITT KEVIN ROGER LABORER      6.50              85.48                           25.64
                                                  6.50                          85.48               25.64     111.12
TOTAL FOR CODE   1050                   6.50              85.48                           25.64
                                                  6.50                          85.48               25.64     111.12

  2505
77500 SOLLICCHIO, JAMES R  LABORER      32.00             288.00                          86.40
                                                  32.00                         288.00              86.40     374.40
88600 ROSS EDWARD STEWART  LABORER      16.00             152.00                          45.60
                                                  16.00                         152.00              45.60     197.60
TOTAL FOR CODE   2505                   40.00             440.00                          132.00
                                                  40.00                         440.00              132.00    572.00

  2310
19450 BROWN PHILIP JOHN   CARPENTERS-RES  8.00            154.68                          46.40
                                                  8.00                          154.68              46.40     201.08
TOTAL FOR CODE   2310                   8.00              154.68                          46.40
                                                  8.00                          154.68              46.40     201.08
TOTAL FOR PROJECT     3310              62.50             680.16                          204.04
                                                  62.50                         680.16              204.04    884.20
```

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PROJECT     2710 [illegible]                    PAYROLL DISTRIBUTION                              [illegible]
[illegible]  [illegible] -87-                         PAGE   37                                         8/26/84

COST CODE                                 ---H O U R S---      ---C O M P E N S A T I O N---     ---B U R D E N---
EMP NO.  EMPLOYEE NAME     CRAFT DESC.   REGULAR              REGULAR    TAXABLE                COMPANY    CRAFT     TOTAL LABOR
                                         OVERTIME   *TOTAL*   OVERTIME   NON-TAXABLE   *TOTAL*  PROJECT    *TOTAL*   AND BURDEN

  1000
23902 [illegible]         LABORER          8.00                 105.20                            31.56
                                                     8.00                              105.20                31.56      136.76
TOTAL FOR CODE   1000                      8.00                 105.20                            31.56
                                                     8.00                              105.20                31.56      136.76

  1470
23966 [illegible]         LABORER                                                                 19.80
                                           4.00      4.00        66.00                  66.00                19.80       85.80
77300 [illegible]         LABORER          2.00                  18.00                            13.50
                                           2.00      4.00        27.00                  45.00                13.50       58.50
09223 YOUNG ROBERT E      LABORER          4.00                  41.00                            12.30
                                                     4.00                               41.00                12.30       53.30
TOTAL FOR CODE   1470                      6.00                  59.00                            45.60
                                           6.00     12.00        93.00                 152.00                45.60      197.60

  2220
23902 [illegible]         LABORER         16.00                 210.40                            63.12
                                                    16.00                              210.40                63.12      273.52
TOTAL FOR CODE   2220                     16.00                 210.40                            63.12
                                                    16.00                              210.40                63.12      273.52

  2300
23966 [illegible]         LABORER          8.00                  88.00                            26.40
                                                     8.00                               88.00                26.40      114.40
77300 [illegible]         LABORER         30.00                 270.00                            81.00
                                                    30.00                              270.00                81.00      351.00
08400 [illegible] STEWART LABORER          4.00                  38.00                            11.40
                                                     4.00                               38.00                11.40       49.40
09223 [illegible]         LABORER         44.00                 451.00                           135.30
                                                    44.00                              451.00               135.30      586.30
TOTAL FOR CODE   2300                     86.00                 847.00                           254.10
                                                    86.00                              847.00               254.10    1,101.10

  2310
18[illegible] [illegible] CARPENTER-[illegible] 24.00           434.04                           130.21
                                                    24.00                              434.04               130.21      564.25
19[illegible] [illegible] PHILIP JOHN CARPENTER-[illegible] 32.00  618.72                        185.62
                                                    32.00                              618.72               185.62      804.34
23966 [illegible]         LABORER         16.00                 176.00                            62.70
                                           2.00     18.00        33.00                 209.00                62.70      271.70
73[illegible] [illegible] JOHN [illegible] CARPENTER-[illegible] 37.30  678.19                   203.46
                                                    37.30                              678.19               203.46      881.65
TOTAL FOR CODE   2310                    109.30               1,906.95                           581.99
                                           2.00    111.30        33.00               1,939.95               581.99    2,521.94
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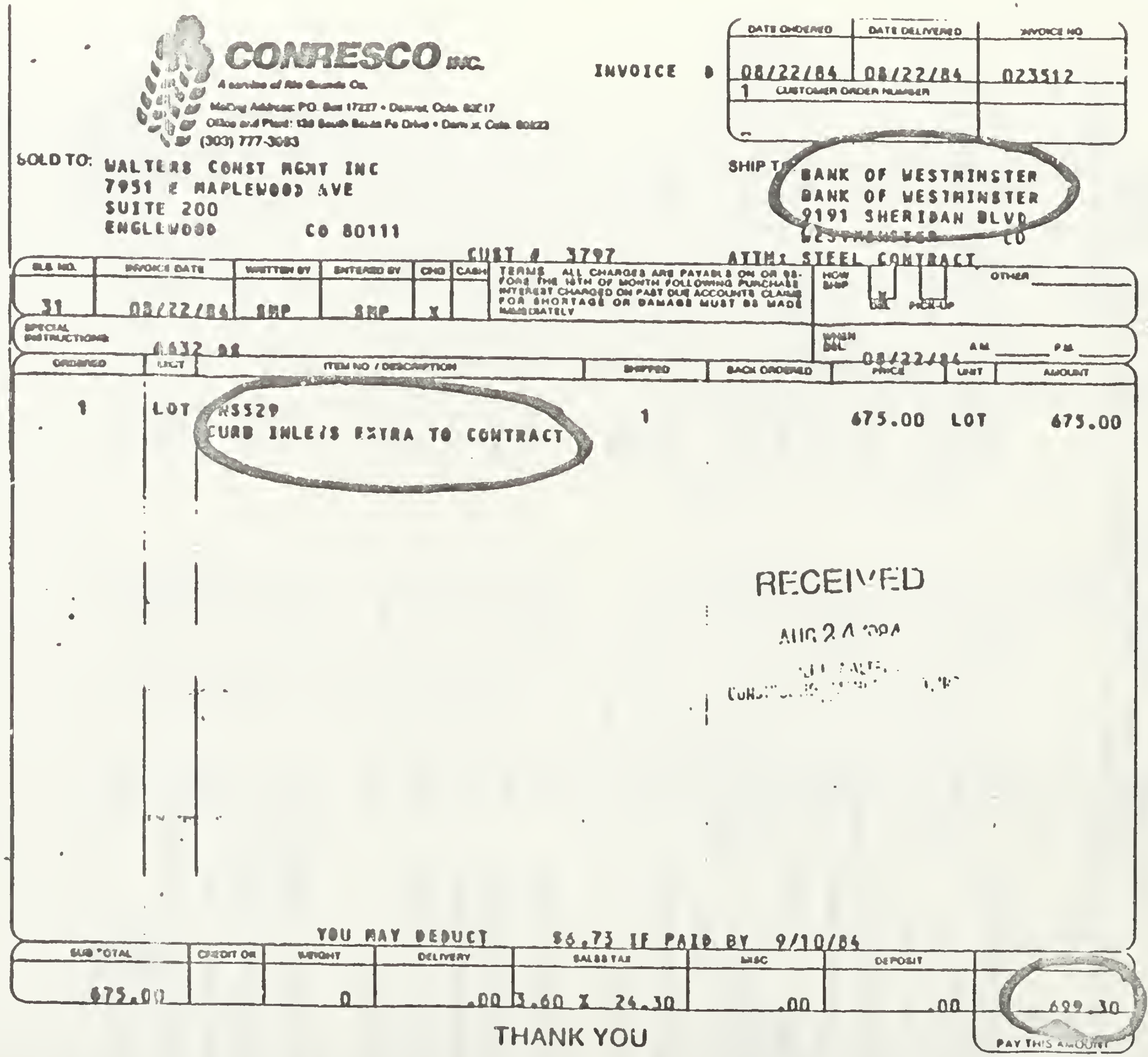


CONRESCO INC.
A service of Rio Grande Co.
Mailing Address: P.O. Box 17227 • Denver, Colo. 80217
Office and Plant: 130 South Santa Fe Drive • Denver, Colo. 80223
(303) 777-3083

INVOICE

DATE ORDERED	DATE DELIVERED	INVOICE NO
08/22/84	08/22/84	023512
1 CUSTOMER ORDER NUMBER		

SOLD TO: WALTERS CONST MGMT INC
7951 E MAPLEWOOD AVE
SUITE 200
ENGLEWOOD CO 80111

SHIP TO: BANK OF WESTMINSTER
BANK OF WESTMINSTER
9191 SHERIDAN BLVD
WESTMINSTER CO

CUST # 3797

ATTN: STEEL CONTRACT

SLS NO.	INVOICE DATE	WRITTEN BY	ENTERED BY	CHG	CASH
31	08/22/84	SMP	SMP	X	

TERMS ALL CHARGES ARE PAYABLE ON OR BEFORE THE 10TH OF MONTH FOLLOWING PURCHASE INTEREST CHARGED ON PAST DUE ACCOUNTS CLAIMS FOR SHORTAGE OR DAMAGE MUST BE MADE IMMEDIATELY

HOW SHIP ☒ DEL ☐ PICK-UP OTHER ____

SPECIAL INSTRUCTIONS 6632 98

WHEN DEL 08/22/84 AM ____ PM ____

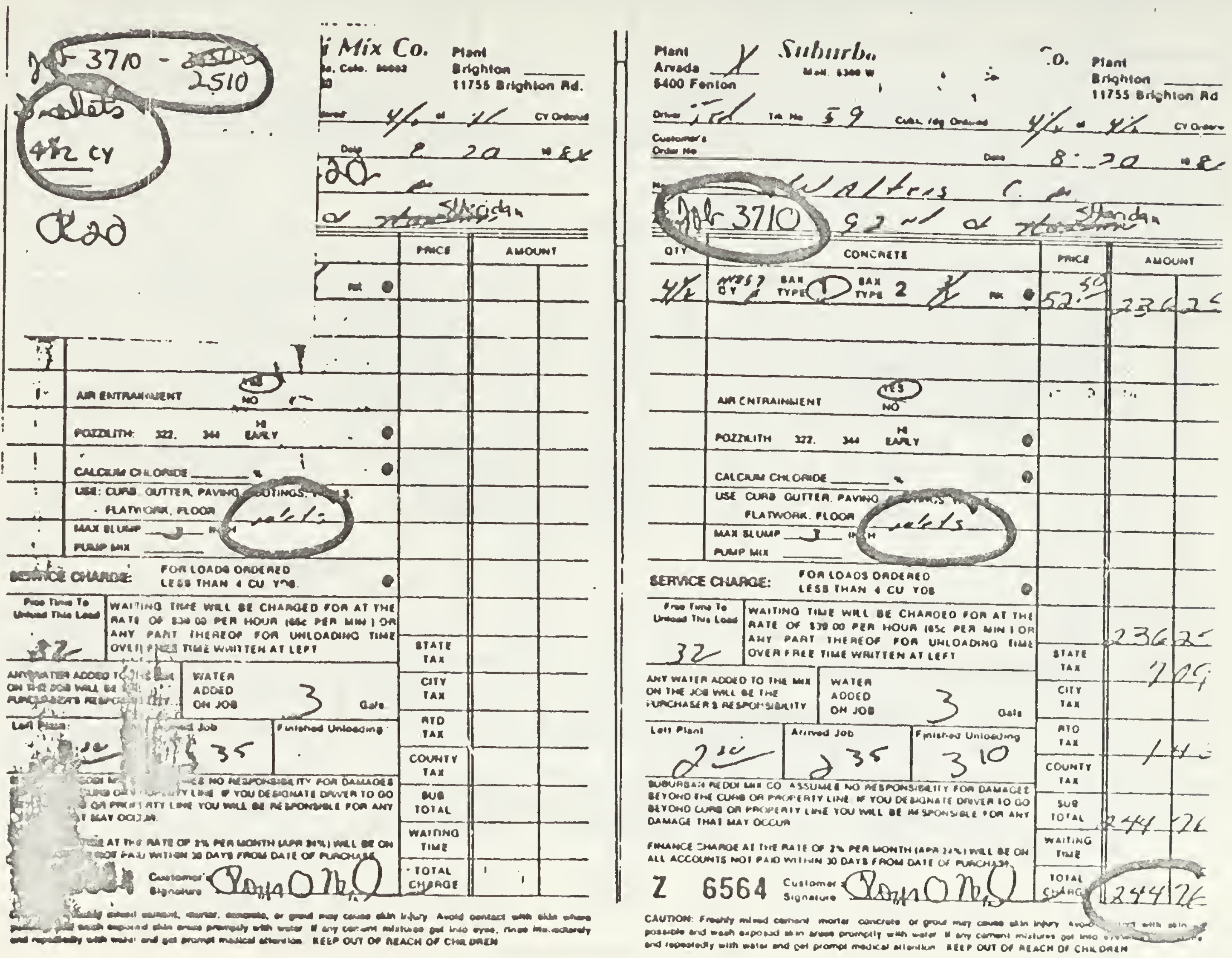
ORDERED	UNIT	ITEM NO / DESCRIPTION	SHIPPED	BACK ORDERED	PRICE	UNIT	AMOUNT
1	LOT	HS529 CURB INLETS EXTRA TO CONTRACT	1		675.00	LOT	675.00

RECEIVED
AUG 24 1984
[illegible]

YOU MAY DEDUCT $6.73 IF PAID BY 9/10/84

SUB TOTAL	CREDIT OR	WEIGHT	DELIVERY	SALES TAX	MISC	DEPOSIT	PAY THIS AMOUNT
675.00		0	.00	3.60 X 24.30	.00	.00	699.30

THANK YOU



Job 3710 - 2510
pallets
4½ CY
CR20

Mix Co. Plant
Brighton
11755 Brighton Rd.

4½ @ 4½ CY Ordered
Date 8 20 8?
20
& Sheridan

	PRICE	AMOUNT

AIR ENTRAINMENT [✓ YES] NO
POZZOLITH: 322. 344 HI EARLY
CALCIUM CHLORIDE ____ %
USE: CURB GUTTER, PAVING, FOOTINGS, WALLS, FLATWORK, FLOOR [✓ pallets]
MAX SLUMP 3 INCH
PUMP MIX

SERVICE CHARGE: FOR LOADS ORDERED LESS THAN 4 CU YDS

Free Time To Unload This Load: 32

WAITING TIME WILL BE CHARGED FOR AT THE RATE OF $30.00 PER HOUR (65¢ PER MIN.) OR ANY PART THEREOF FOR UNLOADING TIME OVER FREE TIME WRITTEN AT LEFT

ANY WATER ADDED TO THE MIX ON THE JOB WILL BE THE PURCHASER'S RESPONSIBILITY

WATER ADDED ON JOB 3 Gals

Left Plant: 2
Arrived Job: 2 35
Finished Unloading:

STATE TAX	
CITY TAX	
RTD TAX	
COUNTY TAX	
SUB TOTAL	
WAITING TIME	
TOTAL CHARGE	

[illegible] ASSUMES NO RESPONSIBILITY FOR DAMAGES [illegible] CURB OR PROPERTY LINE. IF YOU DESIGNATE DRIVER TO GO [illegible] OR PROPERTY LINE YOU WILL BE RESPONSIBLE FOR ANY [illegible] MAY OCCUR.

[illegible] AT THE RATE OF 2% PER MONTH (APR 24%) WILL BE ON [illegible] NOT PAID WITHIN 30 DAYS FROM DATE OF PURCHASE

Customer Signature

[illegible] freshly mixed cement, mortar, concrete, or grout may cause skin injury. Avoid contact with skin where possible and wash exposed skin areas promptly with water. If any cement mixtures get into eyes, rinse immediately and repeatedly with water and get prompt medical attention. KEEP OUT OF REACH OF CHILDREN

Plant
Arvada ✓
5400 Fenton

Suburban [illegible] Co.

Plant
Brighton ____
11755 Brighton Rd

Driver Ted Trk No 59 Cubic Yds Ordered 4½ @ 4½ CY Ordered

Customer's Order No

Date 8-20-8?

Name Walters C

Job 3710 92nd & ~~[illegible]~~ Sheridan

QTY	CONCRETE	PRICE	AMOUNT
4½	AGGREGATE QTY 1 BAG TYPE [✓ 1] BAG TYPE 2 ✓	52.50	236.25

AIR ENTRAINMENT [✓ YES] NO
POZZOLITH 322. 344 HI EARLY
CALCIUM CHLORIDE ____ %
USE CURB GUTTER, PAVING, FOOTINGS, WALLS, FLATWORK, FLOOR [✓ pallets]
MAX SLUMP 3 INCH
PUMP MIX

SERVICE CHARGE: FOR LOADS ORDERED LESS THAN 4 CU YDS

Free Time To Unload This Load: 32

WAITING TIME WILL BE CHARGED FOR AT THE RATE OF $30.00 PER HOUR (65¢ PER MIN.) OR ANY PART THEREOF FOR UNLOADING TIME OVER FREE TIME WRITTEN AT LEFT

ANY WATER ADDED TO THE MIX ON THE JOB WILL BE THE PURCHASER'S RESPONSIBILITY

WATER ADDED ON JOB 3 Gals

Left Plant: 2 10
Arrived Job: 2 35
Finished Unloading: 3 10

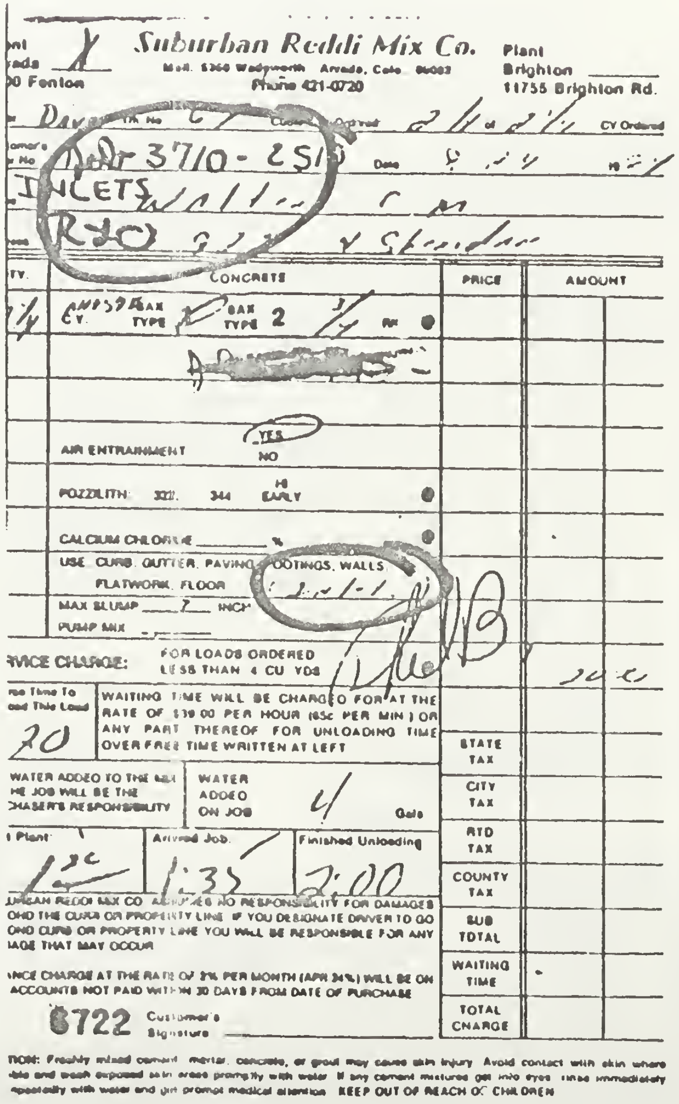
	236.25
STATE TAX	7.09
CITY TAX	
RTD TAX	1.42
COUNTY TAX	
SUB TOTAL	244.76
WAITING TIME	
TOTAL CHARGE	244.76

SUBURBAN REDDI MIX CO. ASSUMES NO RESPONSIBILITY FOR DAMAGES BEYOND THE CURB OR PROPERTY LINE. IF YOU DESIGNATE DRIVER TO GO BEYOND CURB OR PROPERTY LINE YOU WILL BE RESPONSIBLE FOR ANY DAMAGE THAT MAY OCCUR.

FINANCE CHARGE AT THE RATE OF 2% PER MONTH (APR 24%) WILL BE ON ALL ACCOUNTS NOT PAID WITHIN 30 DAYS FROM DATE OF PURCHASE.

Z 6564 Customer Signature

CAUTION: Freshly mixed cement, mortar, concrete, or grout may cause skin injury. Avoid contact with skin where possible and wash exposed skin areas promptly with water. If any cement mixtures get into eyes, rinse immediately and repeatedly with water and get prompt medical attention. KEEP OUT OF REACH OF CHILDREN



ant
ada X
00 Fenton

Suburban Reddi Mix Co.
Mail 5360 Wadsworth Arvada, Colo 80002
Phone 421-0720

Plant
Brighton
11755 Brighton Rd.

Dave Trk No 67 Cubic Yds Ordered 2 1/4 of 2 1/4 CY Ordered
omer's r No Dr 3710 - 2510 Date 8 24 19 84
INLETS Walters C M
RYO 92nd & Sheridan

TY.	CONCRETE	PRICE	AMOUNT
2 1/4	ANF59 CY. SAX TYPE 2 SAX TYPE 2 3/4 RK ●		
	AIR ENTRAINMENT [✓ YES] NO		
	POZZOLITH 322 344 HI EARLY ●		
	CALCIUM CHLORIDE ___ % ●		
	USE CURB GUTTER PAVING FOOTINGS WALLS FLATWORK FLOOR Inlets		
	MAX SLUMP 7 INCH		
	PUMP MIX ___		
RVICE CHARGE:	FOR LOADS ORDERED LESS THAN 4 CU YDS		

Free Time To Unload This Load: 20

WAITING TIME WILL BE CHARGED FOR AT THE RATE OF $39.00 PER HOUR (65c PER MIN) OR ANY PART THEREOF FOR UNLOADING TIME OVER FREE TIME WRITTEN AT LEFT

WATER ADDED TO THE MIX HE JOB WILL BE THE CHASER'S RESPONSIBILITY

WATER ADDED ON JOB 4 Gals

Plant	Arrived Job	Finished Unloading
1:20	1:35	2:00

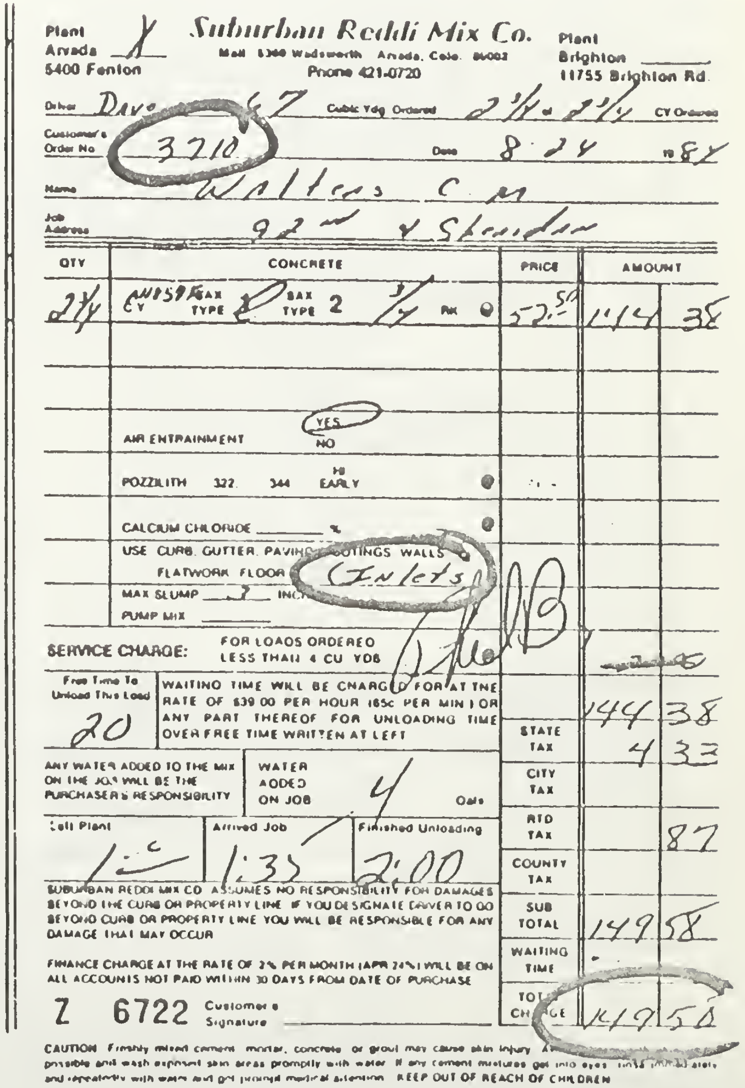
URBAN REDDI MIX CO ASSUMES NO RESPONSIBILITY FOR DAMAGES OND THE CURB OR PROPERTY LINE IF YOU DESIGNATE DRIVER TO GO OND CURB OR PROPERTY LINE YOU WILL BE RESPONSIBLE FOR ANY AGE THAT MAY OCCUR

NCE CHARGE AT THE RATE OF 2% PER MONTH (APR 24%) WILL BE ON ACCOUNTS NOT PAID WITHIN 30 DAYS FROM DATE OF PURCHASE

STATE TAX	
CITY TAX	
RTD TAX	
COUNTY TAX	
SUB TOTAL	
WAITING TIME	
TOTAL CHARGE	

6722 Customer's Signature

TION: Freshly mixed cement, mortar, concrete, or grout may cause skin injury. Avoid contact with skin where ible and wash exposed skin areas promptly with water. If any cement mixtures get into eyes, rinse immediately repeatedly with water and get prompt medical attention. KEEP OUT OF REACH OF CHILDREN



Plant
Arvada X
5400 Fenton

Suburban Reddi Mix Co.
Mail 5360 Wadsworth Arvada, Colo. 80002
Phone 421-0720

Plant
Brighton
11755 Brighton Rd.

Driver Dave 67 Cubic Yds Ordered 2 1/4 of 2 1/4 CY Ordered
Customer's Order No 3710 Date 8 24 19 84
Name Walters C M
Job Address 92nd & Sheridan

QTY	CONCRETE	PRICE	AMOUNT	
2 1/4	ANF59 CY SAX TYPE 2 SAX TYPE 2 3/4 RK ●	52.50	114	38
	AIR ENTRAINMENT [✓ YES] NO			
	POZZOLITH 322 344 HI EARLY ●			
	CALCIUM CHLORIDE ___ % ●			
	USE CURB GUTTER PAVING FOOTINGS WALLS FLATWORK FLOOR (Inlets)			
	MAX SLUMP 7 INCH			
	PUMP MIX ___			
SERVICE CHARGE:	FOR LOADS ORDERED LESS THAN 4 CU YDS		30	00
			144	38

Free Time To Unload This Load: 20

WAITING TIME WILL BE CHARGED FOR AT THE RATE OF $39.00 PER HOUR (65c PER MIN) OR ANY PART THEREOF FOR UNLOADING TIME OVER FREE TIME WRITTEN AT LEFT

ANY WATER ADDED TO THE MIX ON THE JOB WILL BE THE PURCHASER'S RESPONSIBILITY

WATER ADDED ON JOB 4 Gals

Left Plant	Arrived Job	Finished Unloading
1:20	1:35	2:00

SUBURBAN REDDI MIX CO ASSUMES NO RESPONSIBILITY FOR DAMAGES BEYOND THE CURB OR PROPERTY LINE IF YOU DESIGNATE DRIVER TO GO BEYOND CURB OR PROPERTY LINE YOU WILL BE RESPONSIBLE FOR ANY DAMAGE THAT MAY OCCUR

FINANCE CHARGE AT THE RATE OF 2% PER MONTH (APR 24%) WILL BE ON ALL ACCOUNTS NOT PAID WITHIN 30 DAYS FROM DATE OF PURCHASE

STATE TAX	4	33
CITY TAX		
RTD TAX		87
COUNTY TAX		
SUB TOTAL	149	58
WAITING TIME	-	
TOTAL CHARGE	149	58

Z 6722 Customer's Signature

CAUTION: Freshly mixed cement, mortar, concrete, or grout may cause skin injury. Avoid contact with skin where possible and wash exposed skin areas promptly with water. If any cement mixtures get into eyes, rinse immediately and repeatedly with water and get prompt medical attention. KEEP OUT OF REACH OF CHILDREN

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[illegible], OCT 1, 1984, 3:04 PM

FILE CODE - 3  FUTURE DATE        — PROJECT INCOME / COST DISTRIBUTION —                 [illegible]

[illegible] CONST. [illegible] -[illegible]-               PAGE   2                                     9/21/84
*********************************************************************************************************
PROJECT   CODE   PT   TYPE     VENDOR / CLIENT      INV. NO. /   —INCOME—    —COST—     CHECK    GEN.LEDGER
  NO.      NO.   NO.   NO.   ————————NAME————————   C/L TRANS.   —AMOUNT—   —AMOUNT—     NO.     ACCT. NO.
*********************************************************************************************************

2710 [illegible] OFFICE PARK        (CONTINUED)

          [illegible]     01  **************  LOS.[illegible]                $32.25  P[illegible]-0137   300001P
          1230            01  **************  CO.[illegible]                 $7.60  P[illegible]-0138   301001P

                       TOTAL FOR CODE -  1230 -                            $194.60

          1470            01  **************  LOS.[illegible]               $217.38  P002-0137   300001P
          1470            01  **************  CO.[illegible]                 $89.21  P002-0138   301001P

                       TOTAL FOR CODE -  1470 -                            $306.59

          1990            03  A. C. [illegible], INC.  43618                 $73.00  P[illegible]-0145   302001P

                       TOTAL FOR CODE -  1990 -                             $73.00

          2213            01  **************  LOS.[illegible]               $164.00  P[illegible]-0153   300001P
          2213            01  **************  CO.[illegible]                 $49.20  P[illegible]-0156   301001P

                       TOTAL FOR CODE -  2213 -                            $213.20

          2220            01  **************  LOS.[illegible]               $298.20  P002-0137   300001P
          2220            01  **************  CO.[illegible]                $119.06  P002-0140   301001P
          2220            01  **************  LOS.[illegible]               $200.00  P004-0167   300001P
          2220            01  **************  CO.[illegible]                 $64.80  P004-0168   301001P

                       TOTAL FOR CODE -  2220 -                            $681.66

          2300            01  **************  LOS.[illegible]               $488.25  P001-0137   300001P
          2300            01  **************  CO.[illegible]                $133.38  P001-0138   301001P
          2300            01  **************  LOS.[illegible]               $714.40  P002-0141   300001P
          2300            01  **************  CO.[illegible]                $229.34  P002-0142   301001P
          2300            01  **************  LOS.[illegible]               $300.00  P003-0173   300001P
          2300            01  **************  CO.[illegible]                $113.76  P003-0174   301001P
          2300            03  O'DONNELL PLUMBING CO    [illegible]          $[illegible].00  P001-0001   302001P
          2300            03  O'DONNELL PLUMBING CO    [illegible]          $[illegible].00  P003-0077   302001P

                       TOTAL FOR CODE -  2300 -                          $10[illegible].97

          2310            01  **************  LOS.[illegible]              $2172.42  P001-0139   300001P
          2310            01  **************  CO.[illegible]                $741.73  P001-0140   301001P
          2310            01  **************  LOS.[illegible]              $1408.31  P002-0143   300001P
          2310            01  **************  CO.[illegible]                $509.49  P002-0144   301001P
          2310            01  **************  LOS.[illegible]              $1779.38  P003-0173   300001P
          2310            01  **************  CO.[illegible]                $601.17  P003-0176   301001P
          2310            02  **************  JE [illegible]                $779.13  C.[illegible]-0013   302001P
          2310            02  CCS SUPPLY             [illegible]             $87.36  P[illegible]-0[illegible]   302001P
          2310            02  CCS SUPPLY             [illegible]             $97.94  P[illegible]-0[illegible]   302001P
```

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[illegible], OCT 1, 1994, 3:04 PM

FILE CODE - 1 [illegible]            --- PROJECT INCOME / COST DISTRIBUTION ---            [illegible]

[illegible] CONST. [illegible]                        PAGE    3                            [illegible]
*************************************************************************************************
PROJECT  CODE  PT   TYPE    VENDOR / CLIENT        INV. NO. /   ---INCOME---  ---COST---    CHECK      GEN./LEDG
  NO.    NO.   NO.  NO.   ---------NAME---------   G/L TRANS.   ---AMOUNT---  ---AMOUNT---   NO.       ACCT. NO.
*************************************************************************************************

2310 [illegible] OFFICE [illegible]      (CONTINUED)

~~2310          02   [illegible] CO.               STMT                       $[illegible]   P303-0121   302001P~~
  2310          02   [illegible] CO.               STMT   ↑ CANNOT LOCATE     $113.39   P303-0125   302001P
  2310          02   [illegible] CO.               STMT   COPY OF STATEMENT   $217.36   P303-0133   302001P
  2310          02   [illegible] CO.               STMT                       $176.77   P303-0135   302001P
~~2310          02   [illegible] CO.               STMT                       $[illegible]   P303-0140   302001P~~
  2310          02   [illegible] SUPPLY INC.       7436                        $43.41   P304-0164   302001P
  2310          04   CCS SUPPLY                    20990                       $10.36   P304-0046   304001P
  2310          04   CCS SUPPLY                    20998                       $12.96   P304-0047   304001P

                     TOTAL FOR CODE -  2310 -                            $9916.79 →$9,124.4

  2313          03   [illegible] ENGINEERING, INC  1092                       $647.00   P303-0207   303001P
  2313          03   [illegible] ENGINEERING, INC  1092                       $244.00   P303-0208   303001P

                     TOTAL FOR CODE -  2313 -                             $891.00

  2405          03   [illegible] SAND & GRAVEL CO  1                        $10122.40   P304-0048   303001P
  2405          03   ZIG ZAG CONCRETE [illegible] C  10218                     $90.00   P304-0172   303001P

                     TOTAL FOR CODE -  2405 -                           $10212.40

  2420          03   ZIG ZAG CONCRETE [illegible] C  10113                     $90.00   P304-0174   303001P

                     TOTAL FOR CODE -  2420 -                              $90.00

  2425          03   [illegible] ENGINEERING, INC  1092                       $631.00   P303-0205   303001P
  2425          03   ZIG ZAG CONCRETE [illegible] C  10080                    $160.00   P304-0171   303001P
  2425          03   ZIG ZAG CONCRETE [illegible] C  10092                    $650.00   P304-0173   303001P

                     TOTAL FOR CODE -  2425 -                            $1441.00

  2725          01   **************                LAB.093094                 $210.40   P302-0143   300001P
  2725          01   **************                CO.2093094                  $62.12   P302-0146   301001P
  2725          03   [illegible] ENGINEERING, INC  1092                       $956.80   P303-0206   303001P

                     TOTAL FOR CODE -  2725 -                            $1229.32

  2730          01   **************                LAB.093094                 $167.00   P303-0139   300001P
  2730          01   **************                CO.2093094                  $22.10   P303-0150   301001P
  2730          02   [illegible] CO.               STMT                      $1238.91   P303-0124   302001P
  2730          02   [illegible] CO.               STMT                       $301.73   P303-0129   302001P
  2730          02   [illegible] CO.               STMT                       $401.97   P303-0134   302001P
  2730          02   [illegible] CO.               STMT                      $1067.73   P303-0136   302001P
  2730          02   [illegible] CO.               STMT                       $547.12   P303-0141   302001P
  2730          02   [illegible] CO.               STMT                      $1337.32   P303-0142   302001P
  2730          02   [illegible] CO.               STMT                      $[illegible]   P303-0144   302001P

                     TOTAL FOR CODE -  2730 -                            $6473.13
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PROJECT    3710 RYLAND OFFICE PARK             PAYROLL DISTRIBUTION                                  PR0723
BALTICS CONST. MANAGEMENT -89-                      PAGE    27                                        9/02/84
==================================================================================================================
COST CODE                                ---H O U R S---       ---C O M P E N S A T I O N---    ---B U R D E N---
EMP NO.  EMPLOYEE NAME    CRAFT DESC.    REGULAR               REGULAR    TAXABLE               COMPANY    CRAFT     TOTAL LABOR
                                         OVERTIME   *TOTAL*    OVERTIME   NON-TAXABLE  *TOTAL*  PROJECT    *TOTAL*   AND BURDEN
==================================================================================================================


  1030
23732 COLQUITT KEVIN ROGER LABORER       16.00                 210.40                           63.12
                                                    16.00                              210.40              63.12     273.52
TOTAL FOR CODE   1030                    16.00                 210.40                           63.12
                                                    16.00                              210.40              63.12     273.52

  2215
23960 CORCORAN BELCHOR S    LABORER       8.00                  88.00                           26.40
                                                     8.00                               88.00              26.40     114.40
80600 ROSS EDWARD STEWART   LABORER       8.00                  76.00                           22.80
                                                     8.00                               76.00              22.80      98.80
TOTAL FOR CODE   2215                    16.00                 164.00                           49.20
                                                    16.00                              164.00              49.20     213.20

  2305
23960 CORCORAN BELCHOR S    LABORER       8.00                  88.00                           26.40
                                                     8.00                               88.00              26.40     114.40
77500 SOLLECCITO, JAMES E   LABORER       8.00                  72.00                           21.60
                                                     8.00                               72.00              21.60      93.60
80600 ROSS EDWARD STEWART   LABORER       8.00                  76.00                           22.80
                                                     8.00                               76.00              22.80      98.80
89225 YOUNG ROBERT E        LABORER      21.00                 215.25                           64.58
                                                    21.00                              215.25              64.58     279.83
TOTAL FOR CODE   2305                    45.00                 451.25                          135.38
                                                    45.00                              451.25             135.38     586.63

  2310
6325 ALEXOS JORDAN          CARPENTERS-REG 40.00               723.40                          217.02
                                                    40.00                              723.40             217.02     940.42
9450 BROWN PHILIP JOHN      CARPENTERS-REG 32.00               618.72                          185.62
                                                    32.00                              618.72             185.62     804.34
23732 COLQUITT KEVIN ROGER LABORER       16.00                 210.40                           63.12
                                                    16.00                              210.40              63.12     273.52
23960 CORCORAN BELCHOR S    LABORER      16.00                 176.00                           52.80
                                                    16.00                              176.00              52.80     228.80
73040 SINGLETON JOHN S      CARPENTERS-REG 40.00               723.40                          217.02
                                                    40.00                              723.40             217.02     940.42
89225 YOUNG ROBERT E        LABORER       2.00                  20.50                            6.15
                                                     2.00                               20.50               6.15      26.65
TOTAL FOR CODE   2310                   146.00               2,472.42                          741.73
                                                   146.00                            2,472.42             741.73   3,214.15
TOTAL FOR PROJECT    3710               223.00               3,298.07                          989.43
                                                   223.00                            3,298.07             989.43   4,287.50
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PROJECT     3710 ... OFFICE PARK                    PAYROLL DISTRIBUTION                                          PR0290
WALTERS CONST. ENFORCEMENT -99-                         PAGE     26                                               5/31/84
==============================================================================================================================
COST CODE                                   ----H O U R S----    ------C O M P E N S A T I O N----    ---B U R D E N---
EMP NO.  EMPLOYEE NAME      CRAFT DESC.  REGULAR               REGULAR     TAXABLE                     COMPANY    CRAFT     TOTAL LABOR
                                         OVERTIME    *TOTAL*   OVERTIME    NON-TAXABLE      *TOTAL*    PROJECT    *TOTAL*   AND BURDEN
==============================================================================================================================

89225 YOUNG ROBERT K       LABORER          .50                    5.13                                1.54
                                                       .50                                5.13                    1.54        6.67
TOTAL FOR CODE   2745                     53.00                  737.92                              229.33
                                          -1.00      54.00        26.56                   764.48                229.33      993.81

 2310
13325 ALEMAN JOHNSON       CARPENTERS-HEB 24.00                  434.04                              130.21
                                                     24.00                                434.04                130.21      564.25
19450 BURGER PHILLIP JOHN  CARPENTERS-HEB 16.00                  309.36                               92.81
                                                     16.00                                309.36                 92.81      402.17
23952 CALDWELL KEVIN ROGER LABORER        16.00                  210.40                               63.12
                                                     16.00                                210.40                 63.12      273.52
23960 CORDERO BELCHOR J    LABORER         8.00                   88.00                               26.40
                                                      8.00                                 88.00                 26.40      114.40
75040 SINGLETON JOHN S     CARPENTERS-HEB 27.50                  533.31                              160.05
                                                     27.50                                533.31                160.05      693.36
89225 YOUNG ROBERT K       LABORER        12.00                  123.00                               36.90
                                                     12.00                                123.00                 36.90      159.90
TOTAL FOR CODE   2310                    103.50                1,698.11                              509.49
                                                    103.50                              1,698.11                509.49    2,207.60

 2725
23952 CALDWELL KEVIN ROGER LABORER        16.00                  210.40                               63.12
                                                     16.00                                210.40                 63.12      273.52
TOTAL FOR CODE   2725                     16.00                  210.40                               63.12
                                                     16.00                                210.40                 63.12      273.52
TOTAL FOR PROJECT     3710               297.00                3,396.21                            1,026.83
                                          -1.00     298.00        26.56                 3,422.77              1,026.83    4,449.60
```

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PROJECT   3710 [illegible] OFFICE [illegible]       PAYROLL DISTRIBUTION                                  [illegible]
[illegible] [illegible] -[illegible]-                       PAGE   32                                         9/16/84

COST CODE                                ---HOURS---         ----COMPENSATION----                 ---BURDEN---
EMP NO.  EMPLOYEE NAME     CRAFT DESC.   REGULAR             REGULAR    TAXABLE                   COMPANY   CRAFT     TOTAL LABOR
                                         OVERTIME  *TOTAL*   OVERTIME   NON-TAXABLE     *TOTAL*   PROJECT   *TOTAL*   AND BURDEN

  1030
27?92 COLQUITT KEVIN [illegible] LABORER  16.00               210.40                              63.12
                                                   16.00                              210.40               63.12      273.52
TOTAL FOR CODE   1030                     16.00               210.40                              63.12
                                                   16.00                              210.40               63.12      273.52

  1230
36400 MCPHILLIPS LARRY LEO LABORER         8.00                86.00                              25.00
                                                    8.00                               86.00               25.00      111.00
TOTAL FOR CODE   1230                      8.00                86.00                              25.00
                                                    8.00                               86.00               25.00      111.00

  2300
27?60 CORDERO WILCOX E      LABORER        8.00                88.00                              26.40
                                                    8.00                               88.00               26.40      114.40
77500 SALLECCIA, JAMES R    LABORER       14.30               130.50                              39.15
                                                   14.30                              130.50               39.15      169.65
88400 [illegible] EDWARD STEWART LABORER  16.00               152.00                              45.60
                                                   16.00                              152.00               45.60      197.60
99223 YOUNG ROBERT E        LABORER                                                                4.61
                                   -------1.00      1.00       15.38                   15.38                4.61       19.99
TOTAL FOR CODE   2300                     38.30               370.50                             115.76
                                   -------1.00     39.30       15.38                  385.88              115.76      501.64

  2310
14??3 [illegible] [illegible]  CARPENTER-[illegible] 33.00    596.81                             179.04
                                                   33.00                              596.81              179.04      775.85
19?30 [illegible] PHILIP J[illegible]  CARPENTER-[illegible] 24.00  464.04                       147.74
                                   -------1.00     25.00       28.43                  492.47              147.74      640.21
75?00 SINGLETON JOHN S   CARPENTER-[illegible] 32.00          578.72                             181.58
                                   -------1.00     33.00       26.55                  605.27              181.58      786.85
88400 [illegible] EDWARD STEWART LABORER   8.00                76.00                              22.80
                                                    8.00                               76.00               22.80       98.80
TOTAL FOR CODE   2310                     97.00             1,715.57                             531.16
                                   -------2.00     99.00       54.98                1,770.55              531.16    2,301.71
  3700
36400 MCPHILLIPS LARRY LEO LABORER         4.00                43.00                              12.90
                                                    4.00                               43.00               12.90       55.90
TOTAL FOR CODE   3700                      4.00                43.00                              12.90
                                                    4.00                               43.00               12.90       55.90
TOTAL FOR PROJECT     3710               163.30             2,425.47                             748.74
                                  --------3.00    166.30       70.36                2,495.83              748.74    3,244.57
```

LUMBER OF QUALITY

☐ DELIVERY ADDRESS

THE BROOMFIELD LUMBER CO., Inc.

LUMBER, HARDWARE, PAINT, GLASS, STEEL
7925 W. 120th • P.O. BOX 305 • Phone 466-2307
BROOMFIELD, COLO. 80020

7711

Name Walters Con Date 8-14 1984

Address

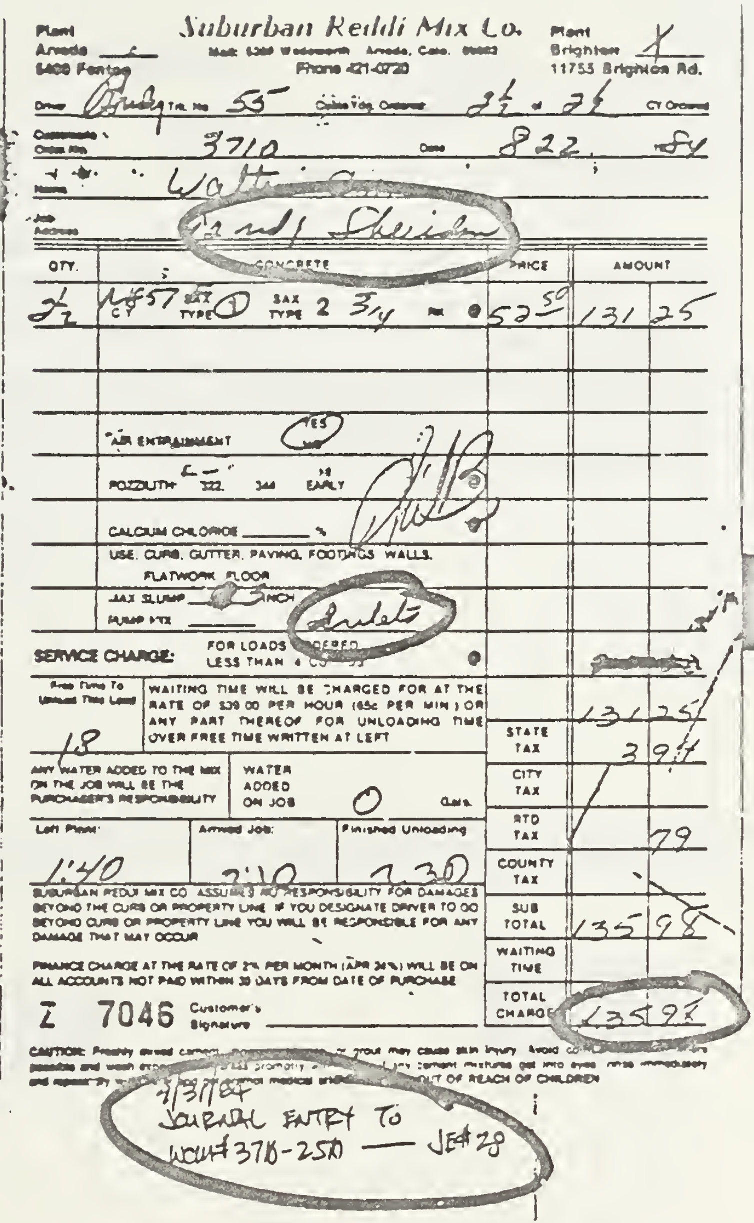
Job No. 17105

Ordered By	Quantity	Description	Total Quantity	Price	TOTAL	
3710-2510	2	handles	2	6.15	12	30
	1	Grate		2.21	2	21
	1	Caulk gun			8	45
	2	Wire Brushes	2	1.25	2	50
	16	4x8 3/4 AC	16	20.75	332	00
	24	2x4x12	24	3.36	80	64
	6	1x4x12 #3	6	1.36	8	16
	4	1x12x12 #3	4	6.84	27	36
	16	2x4x16	16	4.59	73	44
					547	06
Received By			SALES TAX		36	11
			TOTAL		583	17

TERMS: 2% 10th, Net 20th

OUR CREDIT POLICY: Terms are 2% 10th, Net 20th. Discounts are not allowed on saw sharpening, mill expense, mill charges or bid items, or unless otherwise noted. Accounts are billed at the end of each month, and are payable as noted above. A Service Charge of 2% per month on any unpaid balance as of the 25th of the month following billing will be assessed. Additionally, account charge privilege will be suspended until the unpaid balance is cleared up. If this account is assigned for collection, I (customer) agree to pay reasonable attorney's fees.

9/31/84
JOURNAL ENTRY TO
WCM #3710-2510 — JE#28



Plant
Arvada
5400 Fenton

Suburban Reddi Mix Co.
Mail: 5300 Wadsworth Arvada, Colo.
Phone 421-0720

Plant
Brighton X
11753 Brighton Rd.

Driver Andy Trk. No. 55 Cubic Yds. Ordered 2½ of 2½ CY Ordered

Customers Order No. 3710 Date 8 22 84

Name Walters

Job Address Candy Sheridan

QTY.	CONCRETE	PRICE	AMOUNT	
2½	4457 CY SAX TYPE ① SAX TYPE 2 ¾	52 50	131	25
	AIR ENTRAINMENT [✓ YES] NO			
	POZZOLITH 322 344 EARLY			
	CALCIUM CHLORIDE ____ %			
	USE. CURB, GUTTER, PAVING, FOOTINGS WALLS. FLATWORK FLOOR			
	MAX SLUMP 5 INCH PUMP MIX ____ Inlets			
SERVICE CHARGE:	FOR LOADS ORDERED LESS THAN 4 CU. YDS.			

Free Time To Unload This Load 18	WAITING TIME WILL BE CHARGED FOR AT THE RATE OF $39.00 PER HOUR (65¢ PER MIN.) OR ANY PART THEREOF FOR UNLOADING TIME OVER FREE TIME WRITTEN AT LEFT		131	25
		STATE TAX	3	94
ANY WATER ADDED TO THE MIX ON THE JOB WILL BE THE PURCHASER'S RESPONSIBILITY	WATER ADDED ON JOB 0 Gals.	CITY TAX		
Left Plant: 1:40	Arrived Job: 2:10 Finished Unloading 2:30	RTD TAX		79
		COUNTY TAX		
SUBURBAN REDDI MIX CO. ASSUMES NO RESPONSIBILITY FOR DAMAGES BEYOND THE CURB OR PROPERTY LINE. IF YOU DESIGNATE DRIVER TO GO BEYOND CURB OR PROPERTY LINE YOU WILL BE RESPONSIBLE FOR ANY DAMAGE THAT MAY OCCUR		SUB TOTAL	135	98
FINANCE CHARGE AT THE RATE OF 2% PER MONTH (APR 24%) WILL BE ON ALL ACCOUNTS NOT PAID WITHIN 30 DAYS FROM DATE OF PURCHASE		WAITING TIME		
Z 7046 Customer's Signature ____		TOTAL CHARGE	135	98

CAUTION: Freshly mixed cement, [illegible] or grout may cause skin injury. Avoid co[illegible] possible and wash exp[illegible] promptly [illegible] any cement mixtures get into eyes, rinse immediately and repeatedly [illegible] medical attention [illegible] OUT OF REACH OF CHILDREN

2/31/84
JOURNAL ENTRY TO
WO# 3710-250 — JE# 28

CCS SUPPLY, INC.
5150 FOX STREET
DENVER, COLORADO 80216
(303) 29[illegible]-0150

RECEIV
SEP 10 1984

INVOICE № 58101

DATE 8/20/84

SOLD TO
Walters CM
7951 E maplewood, Ave.
Suite 200
Englewood, CO 80111

SHIP TO
9191 Sheridan

OUR ORDER NO.	CUSTOMER ORDER NO.	SALESMAN	TERMS	SHIPPED VIA	Ppd. or Coll.
26227	17108	2	NET 30	WC	

QUANTITY	DESCRIPTION	PRICE	AMOUNT
200 ea	8' LE Cones	27.00/c	54.00
		State	1.62
		City	1.62
		RTD	.32
			57.56

NO MERCHANDISE RETURNED WITHOUT OUR WRITTEN PERMISSION • MAKE NO DEDUCTIONS FROM THIS INVOICE • IF INCORRECT RETURN AT ONCE

CCS SUPPLY, INC.
5150 FOX STREET
DENVER, COLORADO 80216
(303) 295-0150

RECEIVED
SEP 10 1984
BILL WALTERS
[illegible]

INVOICE № 58188

DATE 8-21-84

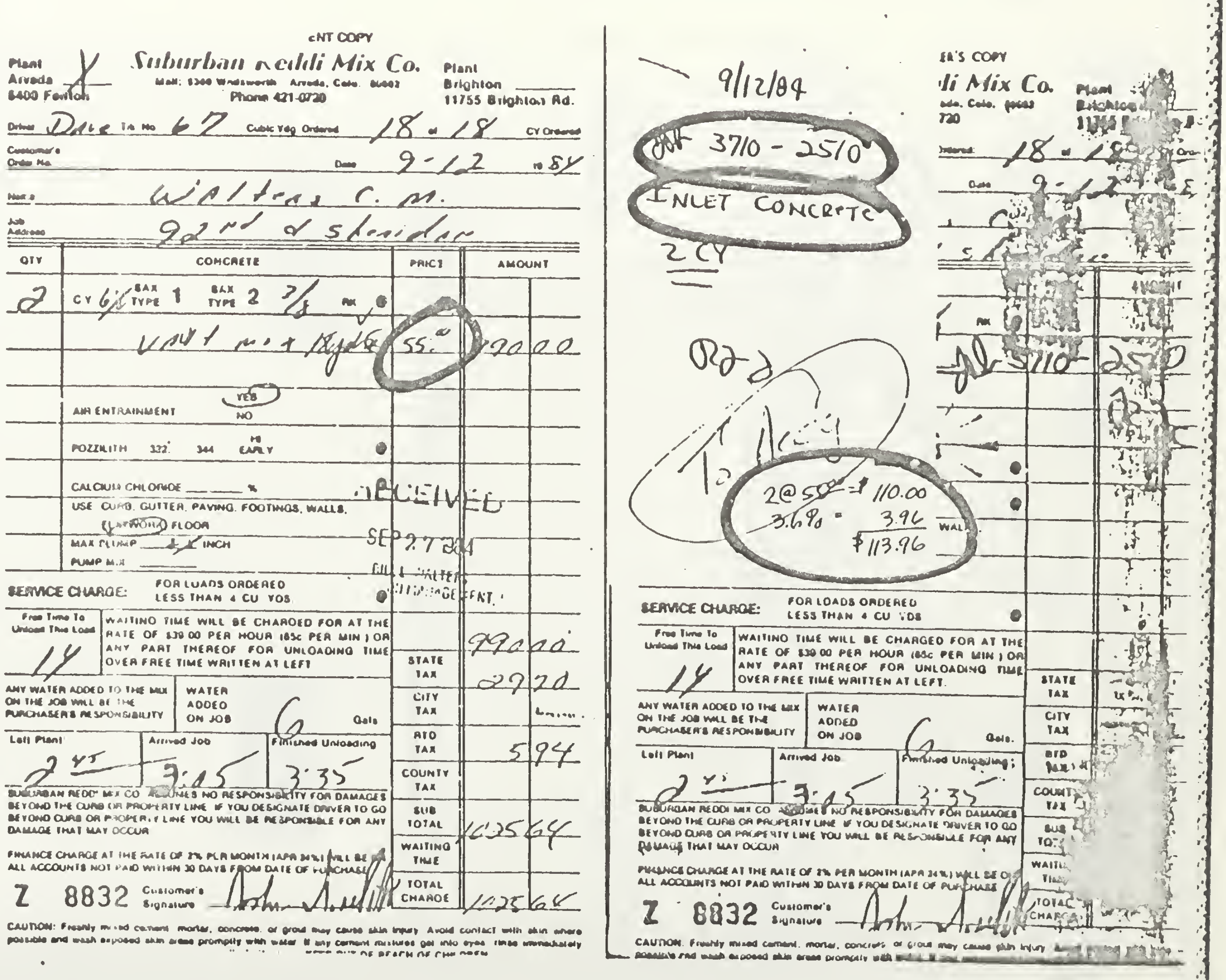
SOLD TO
Walters C.M. Construction
5975 S. Syracuse #107
Englewood, Co 80111

SHIP TO
Westminster bank job

OUR ORDER NO	CUSTOMER ORDER NO.	SALESMAN	TERMS	SHIPPED VIA	Ppd or Coll
C26278	17110	2	NET 30	WC	

QUANTITY	DESCRIPTION	PRICE	AMOUNT
200 ea.	8" SE Cone snapties	23.00c	46.00
		State	1.38
		City	1.38
		RTD	.28
			49.04

NO MERCHANDISE RETURNED WITHOUT OUR WRITTEN PERMISSION - MAKE NO DEDUCTIONS FROM THIS INVOICE - IF INCORRECT RETURN AT ONCE.



NT COPY

Plant Arvada 8400 Fenton ✓

Suburban Reddi Mix Co.
Mail: 5300 Wadsworth Arvada, Colo. 80002
Phone 421-0720

Plant Brighton 11755 Brighton Rd.

Driver Dave Tk No 67 Cubic Yds Ordered 18 of 18 CY Ordered

Customer's Order No. Date 9-12 19 84

Name Walters C. M.

Job Address 92nd & Sheridan

QTY	CONCRETE	PRICE	AMOUNT
2	CY 6½ SAX TYPE 1 SAX TYPE 2 7/8 RK ✓		
	vault mix Hyde	55.00	990 00
	AIR ENTRAINMENT [✓ YES] NO		
	POZZOLITH 322 344 HI EARLY		
	CALCIUM CHLORIDE ______ %		
	USE CURB, GUTTER, PAVING, FOOTINGS, WALLS, [✓ FLATWORK] FLOOR		
	MAX SLUMP 4 INCH		
	PUMP MIX ______		

RECEIVED
SEP 27 1984
BILL WALTERS
MANAGEMENT

SERVICE CHARGE: FOR LOADS ORDERED LESS THAN 4 CU YDS

Free Time To Unload This Load: 14

WAITING TIME WILL BE CHARGED FOR AT THE RATE OF $30.00 PER HOUR (65c PER MIN.) OR ANY PART THEREOF FOR UNLOADING TIME OVER FREE TIME WRITTEN AT LEFT

ANY WATER ADDED TO THE MIX ON THE JOB WILL BE THE PURCHASER'S RESPONSIBILITY

WATER ADDED ON JOB 6 Gals

Left Plant 2 45
Arrived Job 3:15
Finished Unloading 3:35

SUBURBAN REDDI MIX CO ASSUMES NO RESPONSIBILITY FOR DAMAGES BEYOND THE CURB OR PROPERTY LINE. IF YOU DESIGNATE DRIVER TO GO BEYOND CURB OR PROPERTY LINE YOU WILL BE RESPONSIBLE FOR ANY DAMAGE THAT MAY OCCUR

FINANCE CHARGE AT THE RATE OF 2% PER MONTH (APR 24%) WILL BE ON ALL ACCOUNTS NOT PAID WITHIN 30 DAYS FROM DATE OF PURCHASE

Z 8832 Customer's Signature John Aull

	990 00
STATE TAX	29 70
CITY TAX	—
RTD TAX	5 94
COUNTY TAX	
SUB TOTAL	1025 64
WAITING TIME	
TOTAL CHARGE	1025 64

CAUTION: Freshly mixed cement, mortar, concrete, or grout may cause skin injury. Avoid contact with skin where possible and wash exposed skin areas promptly with water. If any cement mixtures get into eyes, rinse immediately ... KEEP OUT OF REACH OF CHILDREN

ER'S COPY

di Mix Co.
ada, Colo. 80002
720

Plant Brighton

Ordered 18 of 18 CY Ordered

Date 9-12

3710 - 2510

9/12/84

OK 3710 - 2510

INLET CONCRETE

2 CY

R2-2

To Acct

2@55.00 = 110.00
3.6% = 3.96
$113.96

SERVICE CHARGE: FOR LOADS ORDERED LESS THAN 4 CU YDS

Free Time To Unload This Load: 14

WAITING TIME WILL BE CHARGED FOR AT THE RATE OF $30.00 PER HOUR (65c PER MIN.) OR ANY PART THEREOF FOR UNLOADING TIME OVER FREE TIME WRITTEN AT LEFT.

ANY WATER ADDED TO THE MIX ON THE JOB WILL BE THE PURCHASER'S RESPONSIBILITY

WATER ADDED ON JOB 6 Gals.

Left Plant 2 45
Arrived Job 3:15
Finished Unloading 3:35

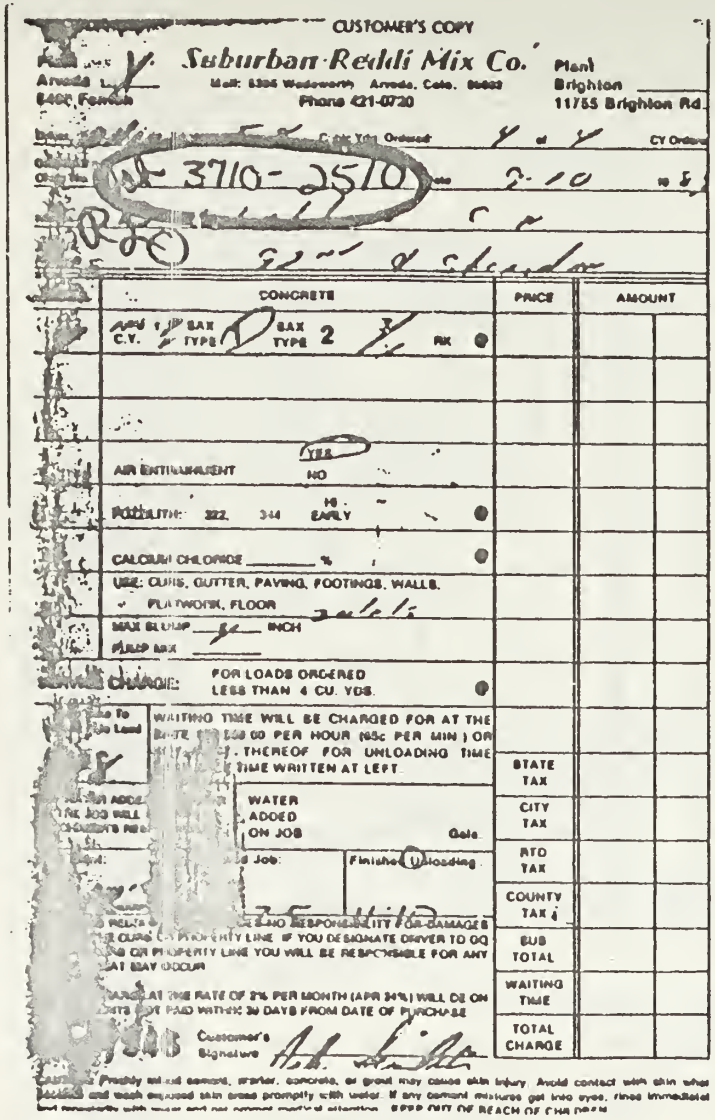
SUBURBAN REDDI MIX CO ASSUMES NO RESPONSIBILITY FOR DAMAGES BEYOND THE CURB OR PROPERTY LINE. IF YOU DESIGNATE DRIVER TO GO BEYOND CURB OR PROPERTY LINE YOU WILL BE RESPONSIBLE FOR ANY DAMAGE THAT MAY OCCUR

FINANCE CHARGE AT THE RATE OF 2% PER MONTH (APR 24%) WILL BE ON ALL ACCOUNTS NOT PAID WITHIN 30 DAYS FROM DATE OF PURCHASE

Z 8832 Customer's Signature John Aull

STATE TAX
CITY TAX
RTD TAX
COUNTY TAX
SUB TOT
WAITI
TOTAL CHARGE

CAUTION: Freshly mixed cement, mortar, concrete, or grout may cause skin injury. [illegible] possible and wash exposed skin areas promptly with [illegible]



CUSTOMER'S COPY

Suburban-Reddi Mix Co.

Plant Arvada ✓ 6400 Fenton

Mail: 6306 Wadsworth Arvada, Colo. 80002
Phone 421-0720

Plant Brighton ______ 11755 Brighton Rd.

Cubic Yds Ordered 4 of 4 CY Ordered

Customer's Order No 3710-2510 Date 9-10 19 8[illegible]

R&E

C m

Job Address 52nd & Sheridan

QTY.	CONCRETE		PRICE	AMOUNT
	C.Y. SAK TYPE 1 SAK TYPE 2 ¾ RK	●		
	AIR ENTRAINMENT [✓ YES] NO			
	POZZILITH 322, 344 HI EARLY	●		
	CALCIUM CHLORIDE ______ %	●		
	USE: CURB, GUTTER, PAVING, FOOTINGS, WALLS, FLATWORK, FLOOR [illegible]			
	MAX SLUMP 4 INCH			
	PUMP MIX			
	SERVICE CHARGE: FOR LOADS ORDERED LESS THAN 4 CU. YDS.	●		

WAITING TIME WILL BE CHARGED FOR AT THE RATE OF $39.00 PER HOUR (65c PER MIN.) OR ANY PART THEREOF FOR UNLOADING TIME OVER FREE TIME WRITTEN AT LEFT.

WATER ADDED ON JOB Gals.

Finished Unloading 11:10

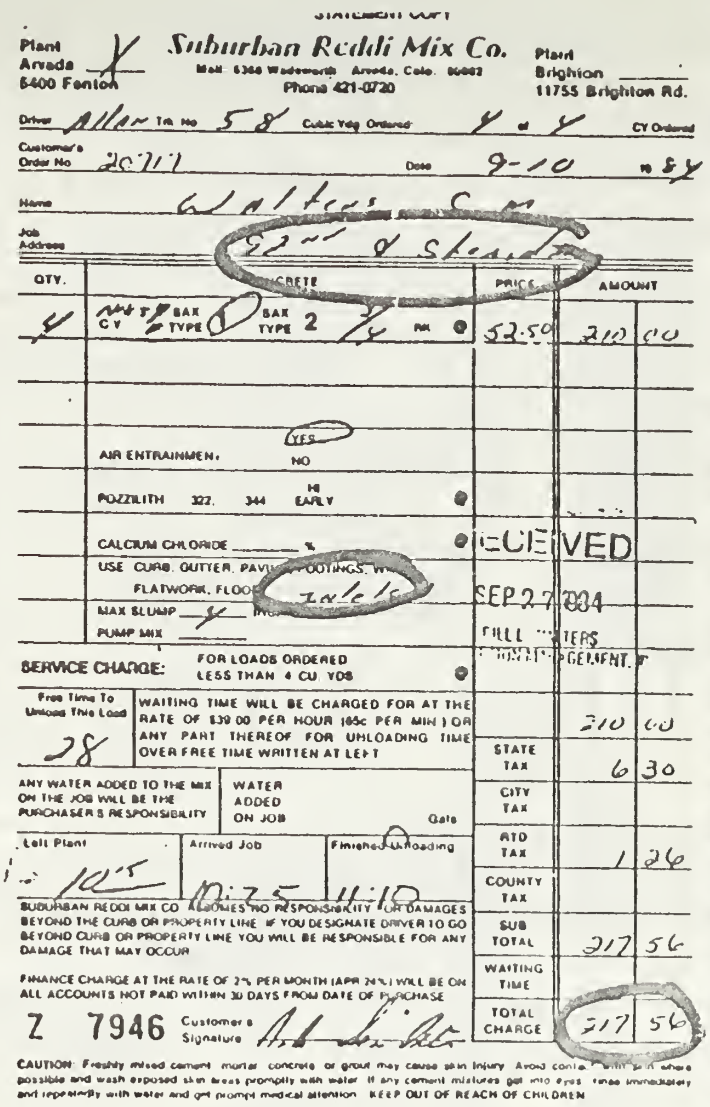
STATE TAX	
CITY TAX	
RTD TAX	
COUNTY TAX	
SUB TOTAL	
WAITING TIME	
TOTAL CHARGE	

...NO RESPONSIBILITY FOR DAMAGES ... CURB OR PROPERTY LINE. IF YOU DESIGNATE DRIVER TO GO ... OR PROPERTY LINE YOU WILL BE RESPONSIBLE FOR ANY ... THAT MAY OCCUR

... AT THE RATE OF 2% PER MONTH (APR 24%) WILL BE ON ... NOT PAID WITHIN 30 DAYS FROM DATE OF PURCHASE

Customer's Signature

CAUTION: Freshly mixed cement, mortar, concrete, or grout may cause skin injury. Avoid contact with skin where possible and wash exposed skin areas promptly with water. If any cement mixtures get into eyes, rinse immediately and repeatedly with water and get prompt medical attention. KEEP OUT OF REACH OF CHILDREN



Suburban Reddi Mix Co.

Plant Arvada ✓ 6400 Fenton

Mail: 6306 Wadsworth Arvada, Colo. 80002
Phone 421-0720

Plant Brighton ______ 11755 Brighton Rd.

Driver Allen Trk No 58 Cubic Yds Ordered 4 of 4 CY Ordered

Customer's Order No 20717 Date 9-10 19 84

Name Walters C m

Job Address 52nd & Sheridan

QTY.	CONCRETE		PRICE	AMOUNT	
4	C.Y. SAK TYPE 1 SAK TYPE 2 ¾ RK	●	52.50	210	00
	AIR ENTRAINMENT [✓ YES] NO				
	POZZILITH 322, 344 HI EARLY	●			
	CALCIUM CHLORIDE ______ %	●			
	USE CURB, GUTTER, PAVING, FOOTINGS, WALLS, FLATWORK, FLOOR [illegible]				
	MAX SLUMP 4 INCH				
	PUMP MIX				
	SERVICE CHARGE: FOR LOADS ORDERED LESS THAN 4 CU. YDS	●			

RECEIVED
SEP 27 1984
FILL [illegible] TERS
[illegible] GEMENT

Free Time To Unload This Load 28

WAITING TIME WILL BE CHARGED FOR AT THE RATE OF $39.00 PER HOUR (65c PER MIN.) OR ANY PART THEREOF FOR UNLOADING TIME OVER FREE TIME WRITTEN AT LEFT

ANY WATER ADDED TO THE MIX ON THE JOB WILL BE THE PURCHASER'S RESPONSIBILITY

WATER ADDED ON JOB Gals.

Left Plant	Arrived Job	Finished Unloading
10:15	10:25	11:10

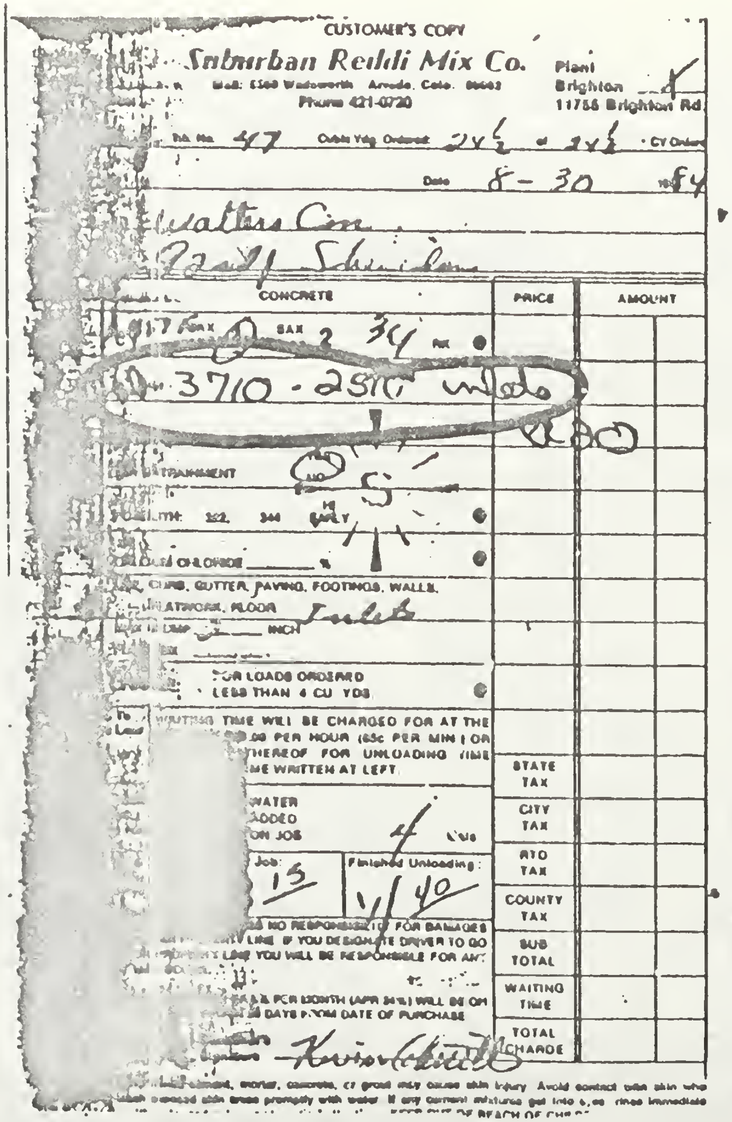
	210	00
STATE TAX	6	30
CITY TAX		
RTD TAX	1	26
COUNTY TAX		
SUB TOTAL	217	56
WAITING TIME		
TOTAL CHARGE	217	56

SUBURBAN REDDI MIX CO. ASSUMES NO RESPONSIBILITY FOR DAMAGES BEYOND THE CURB OR PROPERTY LINE. IF YOU DESIGNATE DRIVER TO GO BEYOND CURB OR PROPERTY LINE YOU WILL BE RESPONSIBLE FOR ANY DAMAGE THAT MAY OCCUR

FINANCE CHARGE AT THE RATE OF 2% PER MONTH (APR 24%) WILL BE ON ALL ACCOUNTS NOT PAID WITHIN 30 DAYS FROM DATE OF PURCHASE

Z 7946 Customer's Signature

CAUTION: Freshly mixed cement, mortar, concrete, or grout may cause skin injury. Avoid contact with skin where possible and wash exposed skin areas promptly with water. If any cement mixtures get into eyes, rinse immediately and repeatedly with water and get prompt medical attention. KEEP OUT OF REACH OF CHILDREN



CUSTOMER'S COPY

Suburban Reddi Mix Co.

Mail: 5360 Wadsworth Arvada, Colo. 80002

Phone 421-0720

Plant Brighton X 11756 Brighton Rd

Tr. No. 47 Cubic Yds Ordered 24½ of 24½ CY Ordered

Date 8-30 19 84

Walters Con.

92 & Sheridan

	CONCRETE	PRICE	AMOUNT
[illegible]	1157 SAX (1) SAX 2 3/4 RK ●		
	3710 - 2510 inlets	2.80	
	AIR ENTRAINMENT (NO) 5		
	POZZOLITH 322 344 HI EARLY ●		
	CALCIUM CHLORIDE ___ % ●		
	USE CURB, GUTTER, PAVING, FOOTINGS, WALLS, FLATWORK, FLOOR Inlets		
	MAX SLUMP 2 INCH		

FOR LOADS ORDERED LESS THAN 4 CU YDS ●

WAITING TIME WILL BE CHARGED FOR AT THE [illegible] .00 PER HOUR (65c PER MIN) OR [illegible] THEREOF FOR UNLOADING TIME [illegible] TIME WRITTEN AT LEFT.

WATER ADDED ON JOB 4 Gals

Arrived Job: 3:15 Finished Unloading: 4:40

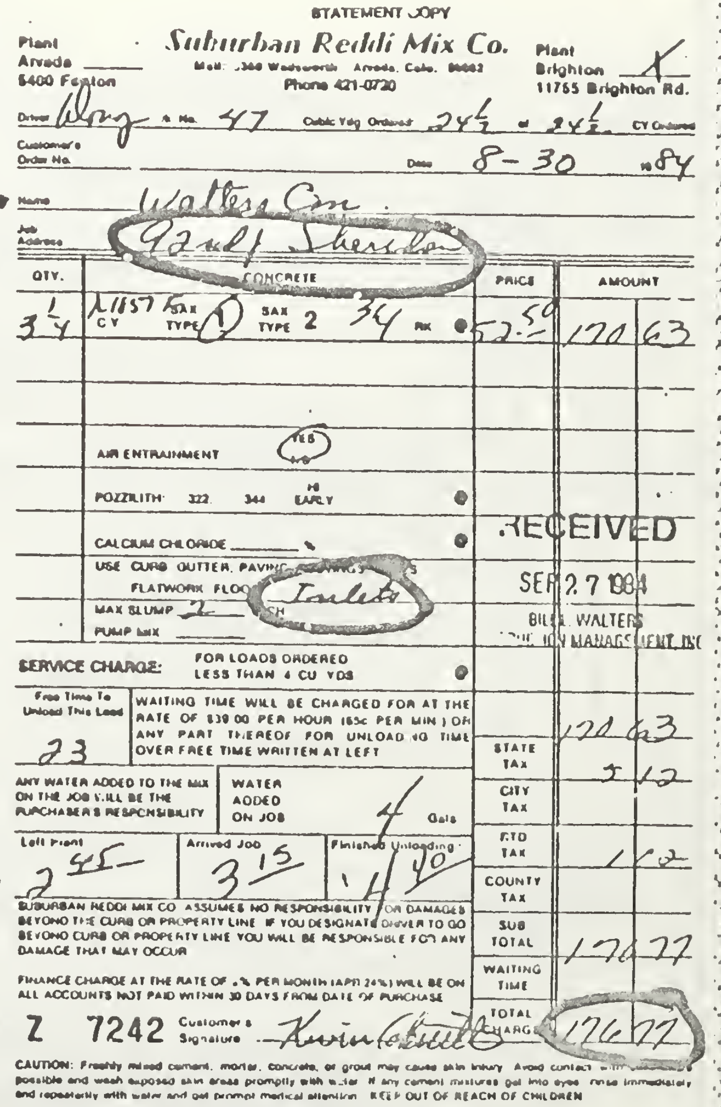
[illegible] NO RESPONSIBILITY FOR DAMAGES [illegible] LINE IF YOU DESIGNATE DRIVER TO GO [illegible] LINE YOU WILL BE RESPONSIBLE FOR ANY [illegible]

[illegible] PER MONTH (APR 24%) WILL BE ON [illegible] DAYS FROM DATE OF PURCHASE

STATE TAX / CITY TAX / RTD TAX / COUNTY TAX / SUB TOTAL / WAITING TIME / TOTAL CHARGE

Customer's Signature Kevin [illegible]

[illegible] cement, mortar, concrete, or grout may cause skin injury. Avoid contact with skin whe[illegible] wash exposed skin areas promptly with water. If any cement mixtures get into eyes, rinse immediate[illegible] KEEP OUT OF REACH OF CHILDREN



STATEMENT COPY

Suburban Reddi Mix Co.

Mail: 5360 Wadsworth Arvada, Colo. 80002

Phone 421-0720

Plant Arvada ____ 5400 Fenton

Plant Brighton X 11765 Brighton Rd.

Driver [illegible] Tr. No. 47 Cubic Yds Ordered 24½ of 24½ CY Ordered

Customer's Order No. ____ Date 8-30 19 84

Name Walters Con.

Job Address 92 & Sheridan

QTY.	CONCRETE	PRICE	AMOUNT
3¼	A1157 CY SAX TYPE (1) SAX TYPE 2 3/4 RK ●	52.50	170 63
	AIR ENTRAINMENT (YES)		
	POZZOLITH 322 344 HI EARLY ●		
	CALCIUM CHLORIDE ___ % ●		
	USE CURB GUTTER, PAVING, FOOTINGS, WALLS, FLATWORK FLOOR Inlets		
	MAX SLUMP 2 INCH		
	PUMP MIX ____		

RECEIVED

SEP 27 1984

BILL L. WALTERS

[illegible]ION MANAGEMENT INC

SERVICE CHARGE: FOR LOADS ORDERED LESS THAN 4 CU YDS ●

Free Time To Unload This Load 23	WAITING TIME WILL BE CHARGED FOR AT THE RATE OF $39.00 PER HOUR (65c PER MIN) OR ANY PART THEREOF FOR UNLOADING TIME OVER FREE TIME WRITTEN AT LEFT		170 63
ANY WATER ADDED TO THE MIX ON THE JOB WILL BE THE PURCHASER'S RESPONSIBILITY	WATER ADDED ON JOB 4 Gals	STATE TAX	5 12
		CITY TAX	
Left Plant 2:45	Arrived Job 3:15 / Finished Unloading 4:40	RTD TAX	1 02
		COUNTY TAX	
SUBURBAN REDDI MIX CO. ASSUMES NO RESPONSIBILITY FOR DAMAGES BEYOND THE CURB OR PROPERTY LINE. IF YOU DESIGNATE DRIVER TO GO BEYOND CURB OR PROPERTY LINE YOU WILL BE RESPONSIBLE FOR ANY DAMAGE THAT MAY OCCUR		SUB TOTAL	176 77
FINANCE CHARGE AT THE RATE OF 2% PER MONTH (APR 24%) WILL BE ON ALL ACCOUNTS NOT PAID WITHIN 30 DAYS FROM DATE OF PURCHASE		WAITING TIME	
Z 7242	Customer's Signature Kevin [illegible]	TOTAL CHARGE	176 77

CAUTION: Freshly mixed cement, mortar, concrete, or grout may cause skin injury. Avoid contact with skin where possible and wash exposed skin areas promptly with water. If any cement mixtures get into eyes, rinse immediately and repeatedly with water and get prompt medical attention. KEEP OUT OF REACH OF CHILDREN

TOOL & ANCHOR SUPPLY INC.

'The Construction Supply Professionals'
P.O. Box 904 • Aurora, Colorado 80040

(303) 320-4573

INVOICE

7436

RECEIVED
AUG 2 9 [illegible]
BILL L. WALTERS
CONSTRUCTION MANAGEMENT

INVOICE DATE	8-27-89
SALESPERSON	[illegible]

7191 Sheridan Blvd.

TO Walters Cons
7951 E Maplewood #200
Englewood, Colo 80111

3710-2510

YOUR ORDER NO.	DATE SHIPPED	SHIPPED VIA	F.O.B. POINT	TERMS
1807	8-27			2 10 net 30

QTY. ORDERED	B/O	QTY. SHIPPED	DESCRIPTION	UNIT PRICE	TOTAL
1		1	1¼" N/C. Die	34.95	34 95
1		1	Can rapid-tap cutting fluid	6.95	6 95
					41 90

Roger L. O'Neal

State Tax	1 26
City Tax	
RTD Tax	25
Shipping Charges	
TOTAL	43 41

A finance charge of 2% per month,
equal to 21% APR, will be charged
on all past due amounts.

Please pay directly from this invoice.
No statement will be sent unless requested.

Thank You

CCS SUPPLY, INC.
5150 FOX STREET
DENVER, COLORADO 80216
(303) 298-0160

RECEIVED
SEP 1 0 1984
BILL L WALTERS
CONSTRUCTION MANAGEMENT, INC.

INVOICE № 30990

DATE 8-21-84

SOLD TO
Walters C.M. Construction

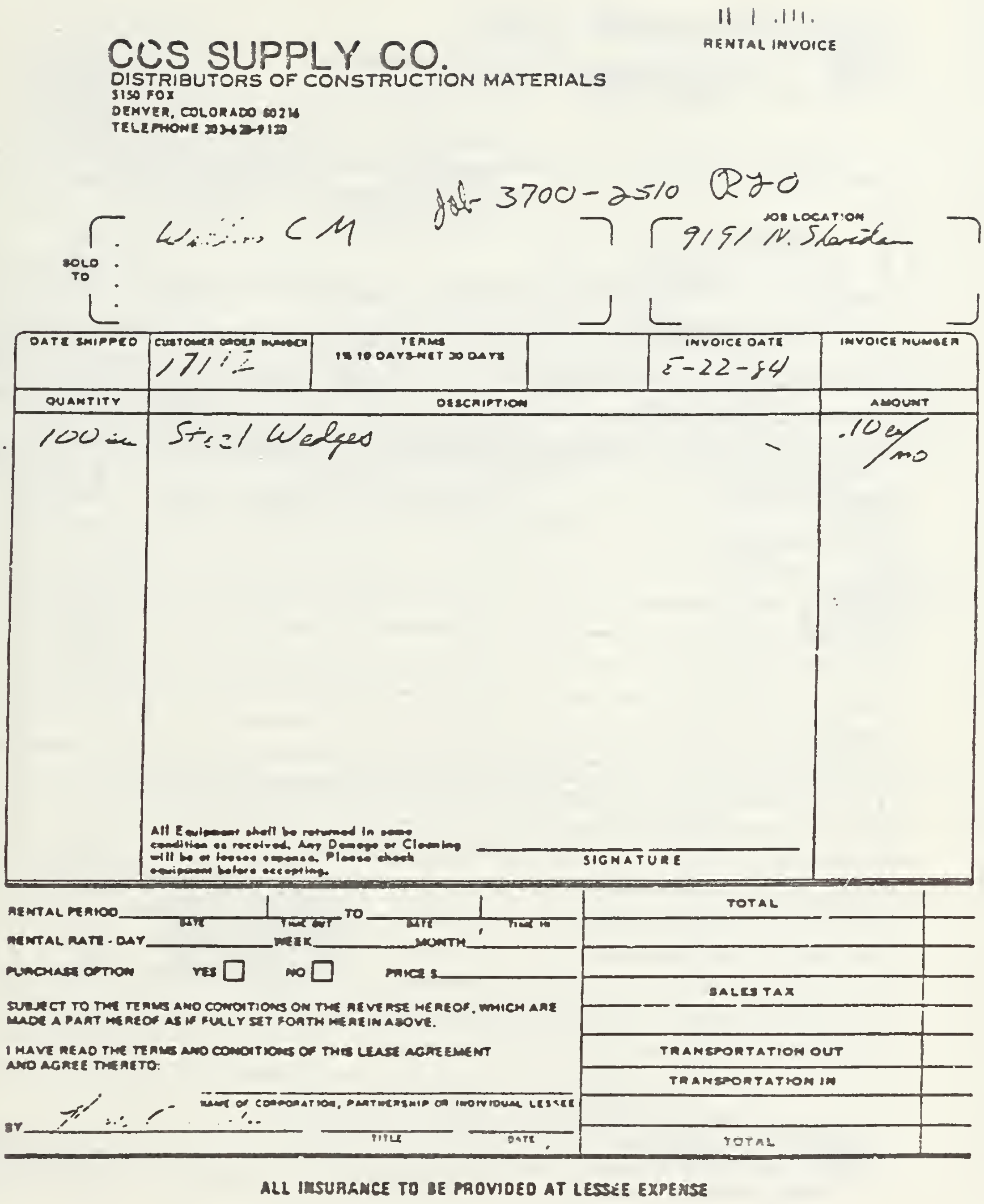
SHIP TO
9191 N. Sheridan

OUR ORDER NO.	CUSTOMER ORDER NO.	SALESMAN	TERMS	SHIPPED VIA	Ppd. or Coll.
R1306	17112	2	NET 30		

QUANTITY	DESCRIPTION	PRICE	AMOUNT
	Rental Equipment per attached	.10eamo	10.00
		State	.30
		RTD	.06
			10.36

NO MERCHANDISE RETURNED WITHOUT OUR WRITTEN PERMISSION - MAKE NO DEDUCTIONS FROM THIS INVOICE - IF INCORRECT RETURN AT ONCE.

[redacted]



|| | .|||.

RENTAL INVOICE

CCS SUPPLY CO.

DISTRIBUTORS OF CONSTRUCTION MATERIALS
5150 FOX
DENVER, COLORADO 80216
TELEPHONE 303-629-9120

Job 3700-2510 RJO

SOLD TO: Watkins CM

JOB LOCATION: 9191 N. Sheridan

DATE SHIPPED	CUSTOMER ORDER NUMBER	TERMS		INVOICE DATE	INVOICE NUMBER
	171'E	1% 10 DAYS-NET 30 DAYS		5-22-84	

QUANTITY	DESCRIPTION	AMOUNT
100 ea	Steel Wedges	.10 ea/mo

All Equipment shall be returned in same condition as received. Any Damage or Cleaning will be at lessee expense. Please check equipment before accepting.

SIGNATURE

RENTAL PERIOD ______ DATE ______ TIME OUT TO ______ DATE ______ TIME IN

RENTAL RATE - DAY ______ WEEK ______ MONTH ______

PURCHASE OPTION YES ☐ NO ☐ PRICE $ ______

SUBJECT TO THE TERMS AND CONDITIONS ON THE REVERSE HEREOF, WHICH ARE MADE A PART HEREOF AS IF FULLY SET FORTH HEREIN ABOVE.

I HAVE READ THE TERMS AND CONDITIONS OF THIS LEASE AGREEMENT AND AGREE THERETO:

NAME OF CORPORATION, PARTNERSHIP OR INDIVIDUAL LESSEE

BY ______ TITLE ______ DATE ______

TOTAL	
SALES TAX	
TRANSPORTATION OUT	
TRANSPORTATION IN	
TOTAL	

ALL INSURANCE TO BE PROVIDED AT LESSEE EXPENSE

WaltersCM A Bill L Walters Company
7861 East Maplewood Avenue, Suite 200, Englewood, Colorado 80111, (303) 770-4300

PURCHASE ORDER

Job & Cost Code 3700-2510 Bldg. Permit No. ______ Excludes City Sales Tax on Purchases Date 8/2021 19 84

To C.C.S. SUPPLY For INLET FORMS

Address 5150 FOX ST. Date Required 8/27/84

Ship To WALTERS C.M. How Ship WCM PICKUP

Address 9191 SHERIDAN BLVD. WESTMINSTER Col. Terms ______

QUANTITY ORDERED	QUANTITY RECEIVED	PLEASE SUPPLY ITEMS LISTED BELOW	UNIT	PRICE	
100		WEDGES	RENTAL		

IMPORTANT
OUR ORDER NUMBER MUST APPEAR ON ALL INVOICES, PACKAGES, ETC.
PLEASE NOTIFY US IMMEDIATELY IF YOU ARE UNABLE TO SHIP COMPLETE ORDER BY DATE SPECIFIED.

Purchasing Agent

White—Supplier • Green—File • Canary—Accounting • Pink—Field • Gold—Numeric Copy

WCM-008

GCS SUPPLY, INC.
5150 FOX STREET
DENVER, COLORADO 80216
(303) 296-0150

RECEIVED
SEP 10 1984
BILL L WALTERS
CONSTRUCTION MANAGEMENT, INC

INVOICE # 30938

DATE 8/20/84

SOLD TO
Walters CM

SHIP TO
9191 Sheridan

OUR ORDER NO.	CUSTOMER ORDER NO.	SALESMAN	TERMS	SHIPPED VIA	Ppd or Coll
1303	17108	2	NET 30	OT	

QUANTITY	DESCRIPTION	PRICE	AMOUNT
	RENTAL EQUIPMENT PER ATTACHED		12.50
		State	.38
		RTD	.08
			12.96

NO MERCHANDISE RETURNED WITHOUT OUR WRITTEN PERMISSION - MAKE NO DEDUCTIONS FROM THIS INVOICE - IF INCORRECT RETURN AT ONCE.

CCS SUPPLY CO.
DISTRIBUTORS OF CONSTRUCTION MATERIALS
5130 FOX
DENVER, COLORADO 80216
TELEPHONE 303-620-9120

RENTAL INVOICE

Job 3710 · 2510
R20

SOLD TO: Walters C M
Job # 3700

JOB LOCATION: 9191 Sheridan Blvd

DATE SHIPPED	CUSTOMER ORDER NUMBER	TERMS 1% 10 DAYS-NET 30 DAYS		INVOICE DATE	INVOICE NUMBER
	17108			8-26-84	

QUANTITY	DESCRIPTION	AMOUNT
12 Ea.	Steel Wedges	.10 ea/mo

All Equipment shall be returned in same condition as received. Any Damage or Cleaning will be at lessee expense. Please check equipment before accepting.

SIGNATURE ______

RENTAL PERIOD ______ DATE ______ TIME OUT TO ______ DATE ______ TIME IN

RENTAL RATE · DAY ______ WEEK ______ MONTH ______

PURCHASE OPTION YES ☐ NO ☐ PRICE $ ______

SUBJECT TO THE TERMS AND CONDITIONS ON THE REVERSE HEREOF, WHICH ARE MADE A PART HEREOF AS IF FULLY SET FORTH HEREIN ABOVE.

I HAVE READ THE TERMS AND CONDITIONS OF THIS LEASE AGREEMENT AND AGREE THERETO:

______
NAME OF CORPORATION, PARTNERSHIP OR INDIVIDUAL LESSEE

BY ______ ______ TITLE ______ DATE

TOTAL	
SALES TAX	
TRANSPORTATION OUT	
TRANSPORTATION IN	
TOTAL	

ALL INSURANCE TO BE PROVIDED AT LESSEE EXPENSE

```
WED, OCT 31, 1984,  5 01 PM

FILE CODE - J  FUTURE DATE            --- PROJECT INCOME / COST DISTRIBUTION ---                 AP0010

WALTERS CONST. MANAGEMENT -89-                    PAGE    1                                    10/31/84
**************************************************************************************************
PROJECT  CODE   PI  TYPE      VENDOR / CLIENT         INV. NO. /    ---INCOME---   ---COST---    AUDIT     GEN./LEDG
  NO.     NO.   NO.  NO.  ----------NAME----------   G/L TRANS.    ---AMOUNT---   ---AMOUNT---    NO.     ACCT. NO.
**************************************************************************************************

 3710  [illegible] OFFICE PARK

         1130          01   ***************          LAB.101484                      $140.64   PR02-0183   500001P
         1130          01   ***************          CO.X101484                       $42.19   PR02-0184   501001P
         1130          03   ***************          JE 13                           $201.00   GL01-0418   505001P
         1130          08   COUNTY LINE LANDFILL     5045239                          $74.40   PJ03-0106   503001P

                    TOTAL FOR CODE -  1130 -                                          $458.23

         1160          02   [illegible] SUPPLY CO    2228                             $78.74   PJ04-0045   502001P

                    TOTAL FOR CODE -  1160 -                                           $78.74

         1330          02   AIR PRODUCTS AND CHEMICAL  362 79851                      $17.82   PJ04-0034   502001P

                    TOTAL FOR CODE -  1330 -                                           $17.82

         1350          01   ***************          LAB.100784                       $10.75   PR01-0177   500001P
         1350         -01   ***************          CO.X100784                        $3.23   PR01-0178   501001P
         1350          01   ***************          LAB.101484                       $25.00   PR02-0180   500001P
         1350          01   ***************          CO.X101484                        $8.06   PR02-0180   501001P
         1350          01   ***************          LAB.102384                       $30.76   PR04-0181   500001P
         1350          01   ***************          CO.X102384                        $9.23   PR04-0182   501001P
         1350          02   WESTERN FASTENERS        001277                           $83.76   PJ04-0046   502001P

                    TOTAL FOR CODE -  1350 -                                          $172.67

         2200          03   MURPHY CONSTRUCTION CO.  3789                           $4346.00   PJ05-0279   503001P

                    TOTAL FOR CODE -  2200 -                                         $4346.00

         2215          03   [illegible] CONST        2002                           $1045.00   PJ05-0080   503001P

                    TOTAL FOR CODE -  2215 -                                         $1045.00

         2220          01   ***************          LAB.100784                      $187.00   PR01-0179   500001P
         2220          01   ***************          CO.X100784                       $32.10   PR01-0180   501001P
         2220          02   BEST LUMBER CO           47657                           $306.80   PJ04-0042   502001P

                    TOTAL FOR CODE -  2220 -                                          $525.90

         2310          02   BEST LUMBER CO           47853                            $14.79   PJ04-0020   502001P
         2310          04   CCS SUPPLY               31160                            $10.36   PJ04-0028   504001P
         2310          04   [illegible]              3321                             $37.12   PJ04-0032   504001P
         2310          04   [illegible] EQUIPMENT [illegible]  7,403.01               $176.27   PJ80-C003   504001P

                    TOTAL FOR CODE -  2310 -                                          $238.54
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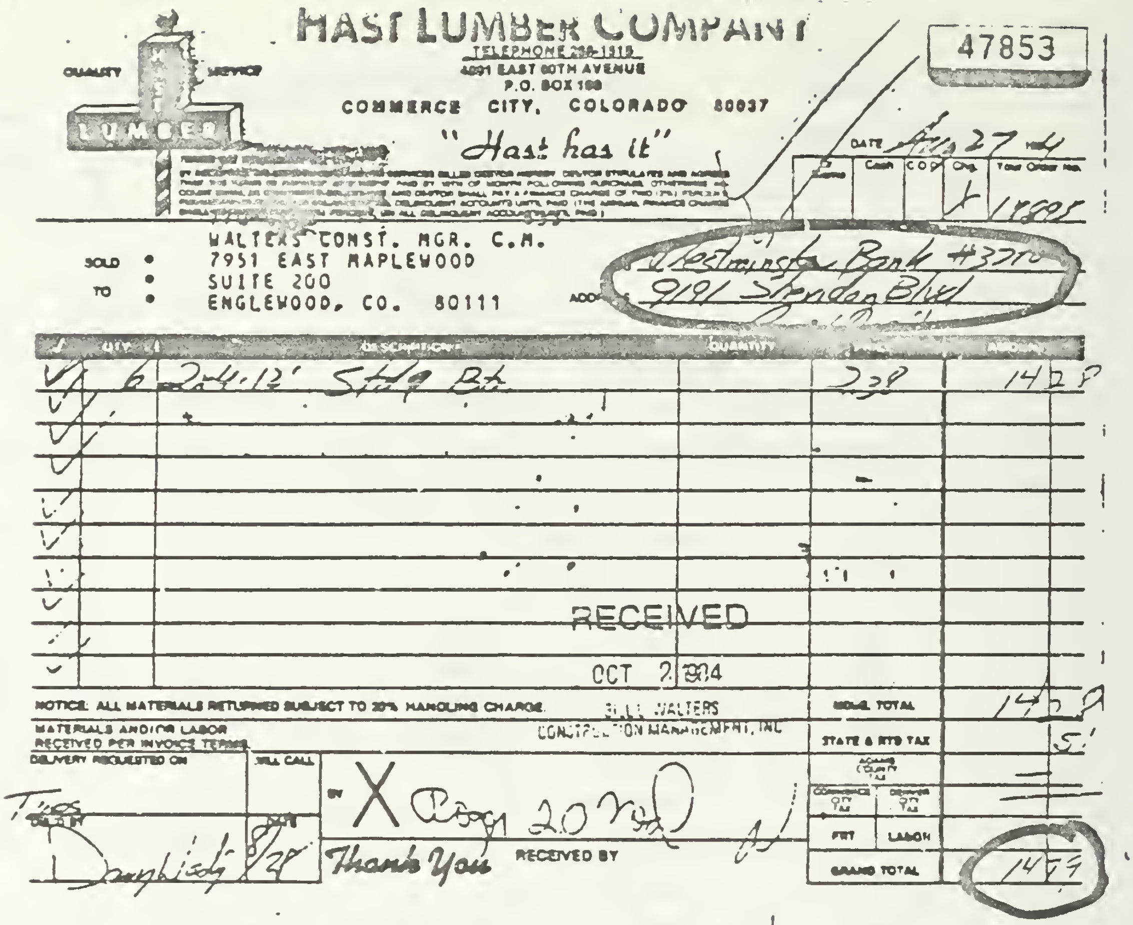


HAST LUMBER COMPANY
TELEPHONE 288-1919
4091 EAST 60TH AVENUE
P.O. BOX 188
COMMERCE CITY, COLORADO 80037

QUALITY SERVICE

"Hast has it"

47853

DATE Aug 27 '84

Cash	C.O.D.	Chg.	Your Order No.
		X	17895

SOLD TO
WALTERS CONST. MGR. C.M.
7951 EAST MAPLEWOOD
SUITE 200
ENGLEWOOD, CO. 80111

ADD Westminster Bank #3710
9191 Sheridan Blvd

✓	QTY	DESCRIPTION	QUANTITY	PRICE	AMOUNT
✓	6	2x4·12' Stud Bt		2.38	14.28

RECEIVED
OCT 2 1984
BILL WALTERS
CONSTRUCTION MANAGEMENT, INC.

NOTICE: ALL MATERIALS RETURNED SUBJECT TO 20% HANDLING CHARGE.

MATERIALS AND/OR LABOR RECEIVED PER INVOICE TERMS.

SUB TOTAL	14.28
STATE & RTD TAX	.51
ADAMS COUNTY TAX	—
COMMERCE CITY TAX / DENVER CITY TAX	—
FRT / LABOR	
GRAND TOTAL	14.79

DELIVERY REQUESTED ON Tues
WILL CALL
SOLD BY
DATE 8/27

BY X

Thank You

RECEIVED BY

ECS SUPPLY, INC.
5150 FOX STREET
DENVER, COLORADO 80216
(303) 296-0150

RECEIVED
OCT 1 1 1984
BILL L. WALTERS
CONSTRUCTION MANAGEMENT, INC.

INVOICE R 31168

DA 0/84

SOLD TO
Walters CM
7951 E Maplewood ave
Suite 200
Englewood, CO 80111

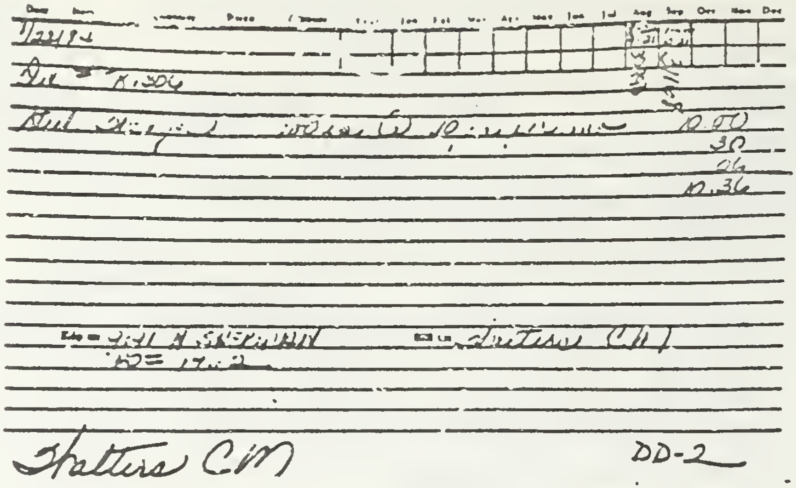
SHIP TO
9191 N Sheridan

OUR ORDER NO.	CUSTOMER ORDER NO.	SALESMAN	TERMS	SHIPPED VIA	Ppd. or Col.
1306	PO #17112	2	NET 30	OT	

QUANTITY	DESCRIPTION	PRICE	AMOUNT
	RENTAL EQUIPMENT PER ATTACHED		10.00
		State	.30
		RTD	.06
			10.36

[illegible]

[redacted]



Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

10.00
.30
.06
10.36

Hatteras CM

Hatteras CM

DD-2

WE RENT MOST EVERYTHING
Handy Nabor Rentals
5155 W. 80th Ave. - Westminster, Colo. 80030
Just East of Sheridan Blvd. on 80th Ave.

RENTAL CONTRACT
No. 0352

EXPIRATION DATE

PREVIOUS DRIVERS LICENSE NO.

BIRTHDAY –

PHONE NO. 770 4300

CAR LICENSE NO.

IN Sept 4-84

OUT Sept 4 84 7 30

DATE DUE IN Sept 5 84

Lessee To C [redacted] Inc

St. 7931 East Mapleward

City Suite 200

EQUIPMENT IS LEASED FOR USE AT

LESSEE JOB NO. P.O. NO. 19491

ITEM RENTED	RATE MINIMUM		1 WEEK	CHARGES
1. 2" Gasoline Pump Intake Hose	30.00 24h			
1 Length 2" Discharge Hose	4.50 24h			

RECEIVED
OCT 1 1984
WATERS MANAGEMENT INC

Bank of West

NOTE SPECIAL CONTRACT TERMS AS APPLIES TO CONTRACTORS AND/OR POWER EQUIPMENT RENTALS. What constitutes a day's rental: 1. [illegible] 2:00 p.m. - 1 day [illegible] 7:30 a.m. following day. 2. Out after 2:00 p.m. - 1 day rental expires 24 hours from time out. 3. Overtime Charges 1/8 of day's rate per hour. A day's rent on non-powered equipment 24 hours.

RENTAL ONLY NOT FOR SALE [✓ BILL ACCOUNT] ☐ PAY ON RETURN

CUSTOMER IS RESPONSIBLE FOR ALL DAMAGES TO TIRES

1½% PER MO. SERVICE CHARGE WILL BE MADE ON ALL AMOUNTS UNPAID AFTER 30 DAYS FROM DUE DATE, RESULTING IN AN ANNUAL PERCENTAGE RATE OF 18%. IN EVENT OF DEFAULT, PURCHASER AGREES THAT COLLECTION COST INCLUDING REASONABLE ATTORNEY FEES, MAY BE RECOVERED.

COLORADO LAW CONCERNING THEFT OF LABOR, SERVICES, OR THE USE OF PROPERTY, AND PROVIDING PENALTIES THEREFOR. C.R.S. '73, § 18-4-402, as amended by HB 1203 (1976): 18-4-402 IS MADE PART OF THIS CONTRACT.

PROVISIONS ON THE BACK OF THIS LEASE ARE PART OF THIS CONTRACT
CUSTOMER IS RESPONSIBLE FOR THEFT OF RENTAL EQUIPMENT WHILE IN HIS CUSTODY.

RENT	34	50
HOSE		
DELIVERY & PICK UP		
SUBTOTAL		
TAX	2	62
DEPOSIT		
GASOLINE		
TOTAL CHARGES	37	12

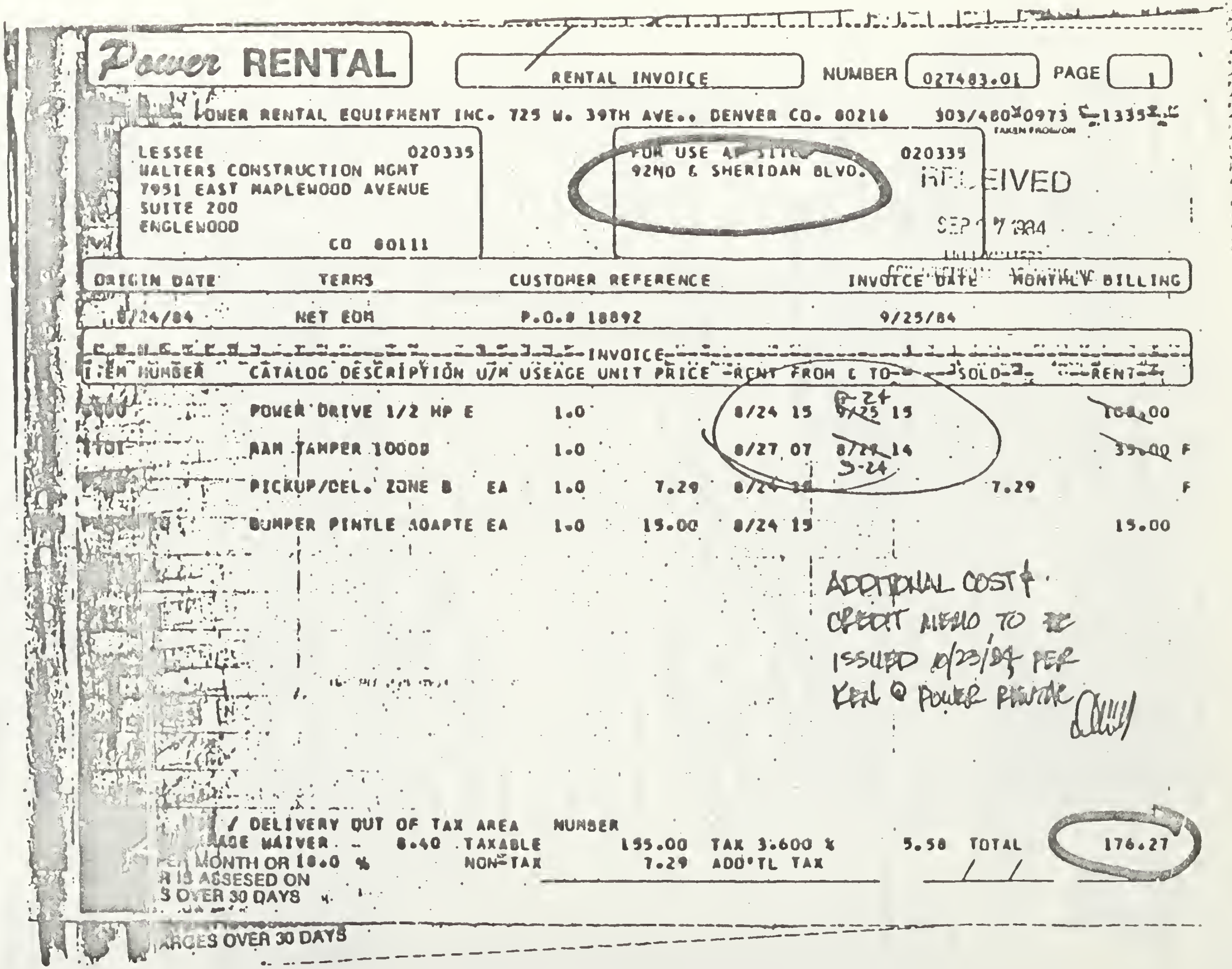
SIGN HERE → BY X
LESSEE

YOUR PROMPT RETURN WILL SAVE YOU MONEY

WE CHARGE 7 DAYS A WEEK - WE CHARGE FOR TIME OUT NOT TIME USED

Call
427-9175
For Hours

RENTAL RATES QUOTED COVER 40 HOUR WEEK, OR 8 HOUR DAY.



Power RENTAL

RENTAL INVOICE

NUMBER 027483.01 PAGE 1

POWER RENTAL EQUIPMENT INC. 725 W. 39TH AVE.. DENVER CO. 80216 303/480-0973 C-1335

TAKEN FROM/ON

LESSEE 020335
WALTERS CONSTRUCTION MGMT
7951 EAST MAPLEWOOD AVENUE
SUITE 200
ENGLEWOOD
CO 80111

FOR USE AT SITE 020335
92ND & SHERIDAN BLVD.

RECEIVED
SEP 27 1984

ORIGIN DATE	TERMS	CUSTOMER REFERENCE	INVOICE DATE	MONTHLY BILLING
8/24/84	NET EOM	P.O.# 18892	9/25/84	

INVOICE

ITEM NUMBER	CATALOG DESCRIPTION	U/M	USEAGE	UNIT PRICE	RENT FROM	& TO	SOLD	RENT	
[illegible]	POWER DRIVE 1/2 HP E		1.0		8/24 15	~~9/25~~ 9-24 15		~~108.00~~	
[illegible]	RAM TAMPER 1000D		1.0		8/27 07	~~8/24~~ 9-24 14		~~39.00~~	F
[illegible]	PICKUP/DEL. ZONE B	EA	1.0	7.29	8/24 [illegible]		7.29		F
[illegible]	BUMPER PINTLE ADAPTE	EA	1.0	15.00	8/24 15			15.00	

ADDITIONAL COST +
CREDIT MEMO TO BE
ISSUED 10/23/84 PER
KEN @ POWER RENTAL

/ DELIVERY OUT OF TAX AREA NUMBER
AGE WAIVER - 8.40 TAXABLE 155.00 TAX 3.600 % 5.58 TOTAL 176.27
PER MONTH OR 18.0 % NON-TAX 7.29 ADD'TL TAX
R IS ASSESED ON
S OVER 30 DAYS

ARGES OVER 30 DAYS

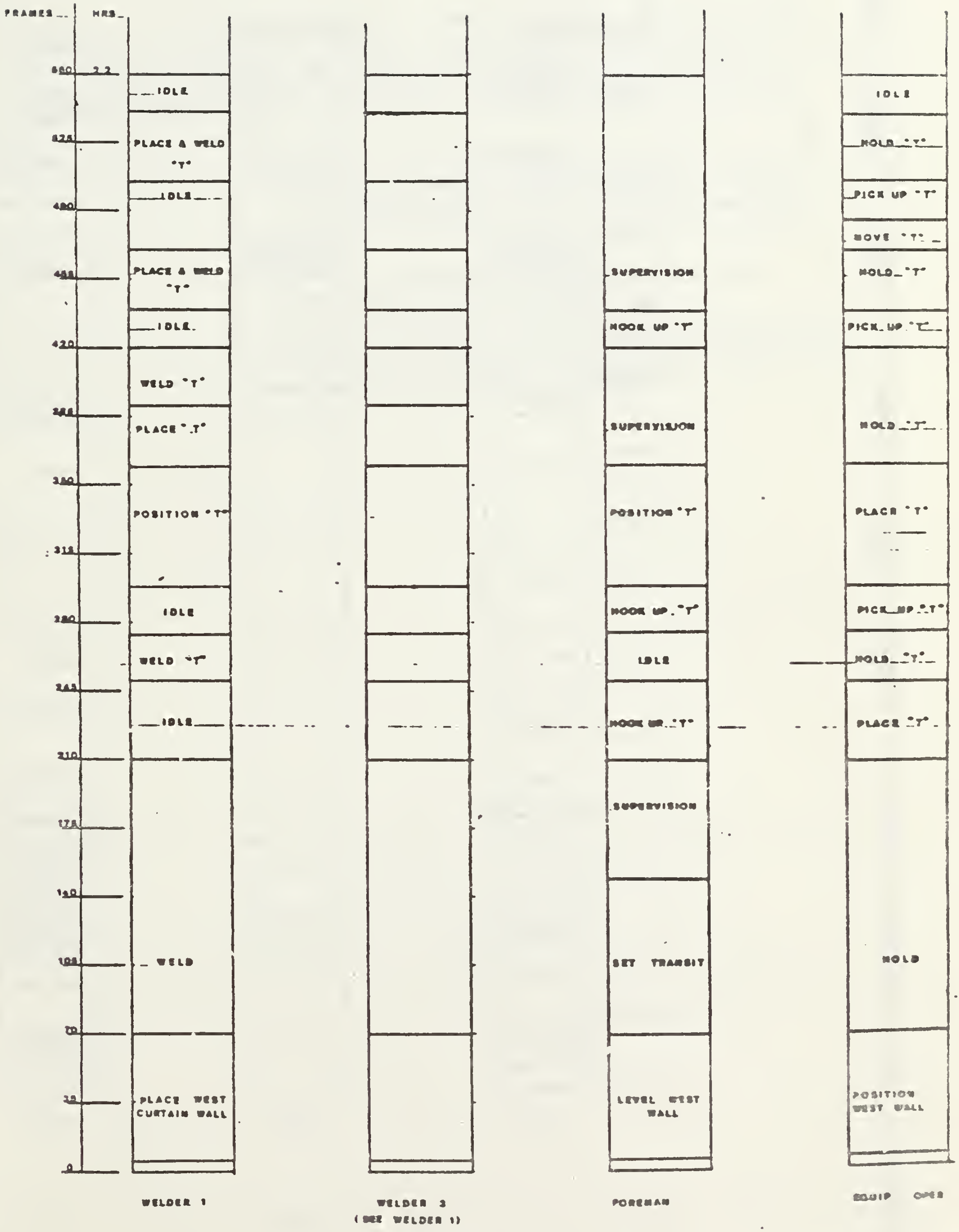
APPENDIX E

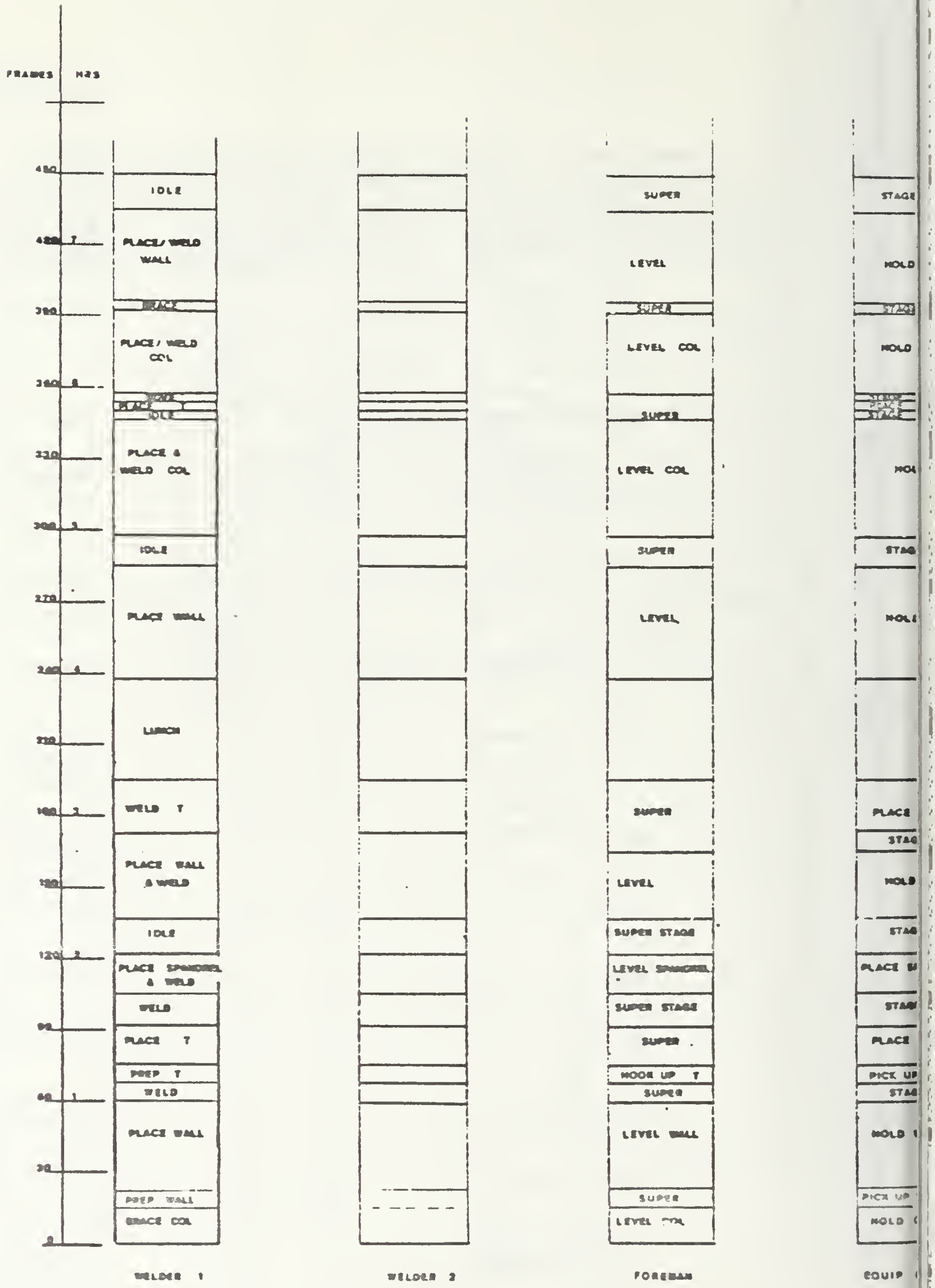
PROBLEMS AND SOLUTIONS

ASSIGNMENT 1

Analyze and suggest ways to improve the erection process of the precast structure of the Bank of Westminster from the given timelapse film. Set up a crew balance chart for analysis and comparison as shown in Methods Improvement for Construction Managers by Henry W. Parker and Clarkson H. Ogelsby, McGraw Hill Book Co., 1972.

Given:
1) Welder 1 is dressed in dark pants and dark shirt.
2) Welder 2 is dressed in dark pants and white shirt.
3) Foreman is dressed in dark pants, white shirt, and red hard hat.
4) Equipment Operator is dressed in dark pants, dark shirt, and dark ball cap. (NOTE: Operator does not leave cab of crane.)
5) Each frame was taken every 60 seconds, therefore 1 frame is equal to 1 minute.
6) The 60 second interval starts at the start of film.
7) The second half of the film was taken at 15 second intervals, therefore 4 frames equals 1 minute.

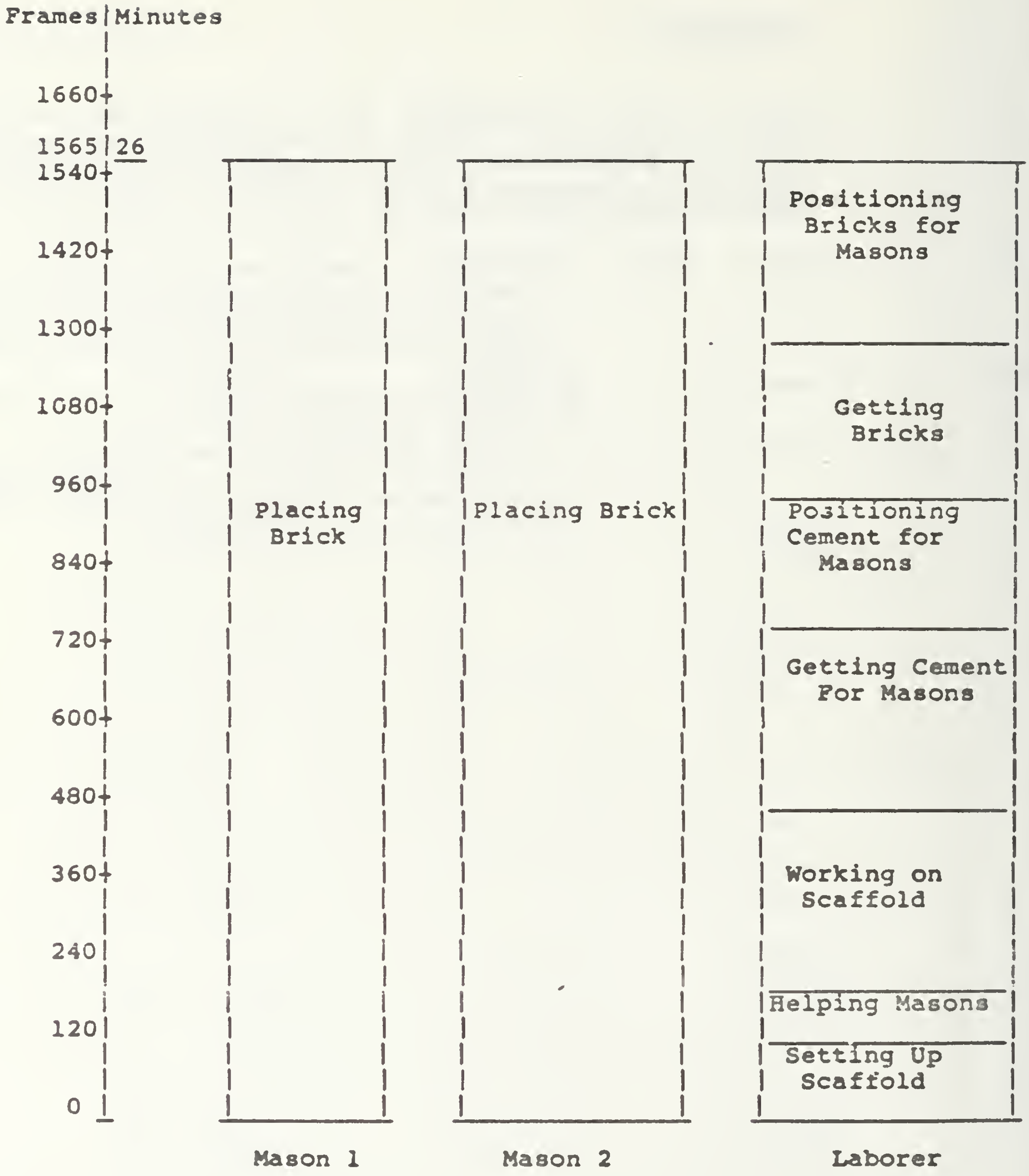

FRAMES
HRS
560
2.2
525
490
455
420
385
350
315
280
245
210
175
140
105
70
35
0
IDLE
PLACE & WELD "T"
IDLE
PLACE & WELD "T"
IDLE
WELD "T"
PLACE "T"
POSITION "T"
IDLE
WELD "T"
IDLE
WELD
PLACE WEST CURTAIN WALL
SUPERVISION
HOOK UP "T"
SUPERVISION
POSITION "T"
HOOK UP "T"
IDLE
HOOK UP "T"
SUPERVISION
SET TRANSIT
LEVEL WEST WALL
IDLE
HOLD "T"
PICK UP "T"
MOVE "T"
HOLD "T"
PICK UP "T"
HOLD "T"
PLACE "T"
PICK UP "T"
HOLD "T"
PLACE "T"
HOLD
POSITION WEST WALL
WELDER 1
WELDER 2
(SEE WELDER 1)
FOREMAN
EQUIP OPER


FRAMES
HRS
450
420 7
390
360 6
330
300 5
270
240 4
210
180 3
150
120 2
90
60 1
30
0
IDLE
PLACE/WELD WALL
BRACE
PLACE/WELD COL
PLACE
IDLE
PLACE & WELD COL
IDLE
PLACE WALL
LUNCH
WELD T
PLACE WALL & WELD
IDLE
PLACE SPANDREL & WELD
WELD
PLACE T
PREP T
WELD
PLACE WALL
PREP WALL
BRACE COL
SUPER
LEVEL
SUPER
LEVEL COL
SUPER
LEVEL COL
SUPER
LEVEL
SUPER
LEVEL
SUPER STAGE
LEVEL SPANDREL
SUPER STAGE
SUPER
HOOK UP T
SUPER
LEVEL WALL
SUPER
LEVEL COL
STAGE
HOLD
STAGE
HOLD
STAGE
PICK
STAGE
HOL
STAG
HOLE
PLACE
STAG
HOLD
STAG
PLACE SI
STAG
PLACE
PICK UP
STAG
HOLD
PICK UP
HOLD
WELDER 1
WELDER 2
FOREMAN
EQUIP

ASSIGNMENT 2

Analyze and suggest ways to improve the erection process of the brick veneer of the Bank of Westminster from the given timelapse as shown in Methods Improvement for Construction Managers by Henry W. Parker and Clarkson H. Ogelsby, McGraw Hill Book Co., 1972.

Given:
1) Foreman is heavy set with white hard hat dressed in tank jacket and dark pants.
2) Two bricklayers both dressed in maroon shirts and dark pants with white hard hats.
3) Laborer dressed in gray jacket, dark pants, and red hard hat.
4) Laborer dressed in gray jacket with blue shoulders, dark pants, and white hard hat.
5) Film was at 1 second intervals, therefore 60 frames equals 1 minute.


Frames
Minutes
1660
1565
26
1540
1420
1300
1080
960
840
720
600
480
360
240
120
0
Placing Brick
Placing Brick
Positioning Bricks for Masons
Getting Bricks
Positioning Cement for Masons
Getting Cement For Masons
Working on Scaffold
Helping Masons
Setting Up Scaffold
Mason 1
Mason 2
Laborer

APPENDIX F

BIBLIOGRAPHY

BIBLIOGRAPHY

Barrie, Donald S. *Directions in Managing Construction.* New York, N.Y.: John Wiley and Sons, 1981.

Culbertson, Alan N. and Kenney, Donald E. *Contract Administration Manual for the Design Professional.* New York, N.Y.: McGraw Hill Book Company, 1983.

Douglas, Clarence J. and Munger, Elmer L. *Construction Management* Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1969.

Oppenheimer, Samuel P. *Directing Construction for a Profit.* New York, N.Y.: McGraw Hill Book Co., 1971.

Parker, Henry W. and Oglesby, Clarkson H. *Methods Improvement for Construction Managers.* New York, N.Y.: McGraw Hill Book Company, 1972.

Reiner, Laurence E. *Handbook of Construction Management.* Englewood Cliffs, N.J.: Prentice-Hall Inc., 1972.

Rubey, Henry and Milner, Walker W. *Construction and Professional Management.* Oklahoma: The Macmillan Company, 1966.

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